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PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

CLARK OIL & REFINING CORPORATION
BLUE ISLAND, IL
ILD 005 109 822

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Resource Applications, Inc. (RAI) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Clark Oil & Refining Corporation (Clark) facility in Blue Island, IL. This report summarizes the results of the PA/VSI and evaluates the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified.

Clark receives sweet crude oil via pipeline, refines it, and produces many petroleum-related products such as gasoline, liquefied petroleum gas (LPG), fuel oil #2, fuel oil #6, asphalt, propane, and butane. The facility covers 160 acres and has been in operation since the 1920s. In 1943 Emery Clark bought the refinery. Emery Clark sold the property to Apex Corporation in 1981. In 1988 Apex attempted to avoid bankruptcy by selling the refinery to the Horsham Corporation. Both Apex and Horsham Corporation maintained the "Clark" name for the Blue Island facility. Clark is regulated as a generator and treatment/storage/disposal interim status facility, but is working toward removing all its hazardous waste within 90 days of generation.

The facility consists of three parcels of land: 1) the Refinery Process Area; 2) the Southwest Crude Oil Tank Field and Barge Loading Area; and, 3) the Northwest Crude Oil Tank Field. In 1985, Clark sold its chemical plant to BTL Industries. Clark still owns a very small parcel of land within this BTL Industries property. Between the Northwest Tank Field and BTL Industries is a parcel of land owned by a different division of Clark. The property is referred to as the Clark Blue Island Terminal. This property used to be part of the refinery. All property previously owned by Clark was included in this PA/VSI.

The primary wastes generated at Clark are dissolved air floatation (DAF) float, slop oil emulsion solids, heat exchanger cleaning sludge, American Petroleum Institute (API) separator sludge, catalyst fines, cooling tower basin sludges, and scrap sulfur and wastewater. The facility is surrounded by a 6-foot chain link fence topped with barbed wire. All entrances to the facility are locked or guarded at all times. The nearest residences are within a mile in all directions from the facility. The nearest school is approximately a 1/2 mile to the northeast of the facility. The Calumet Sag Channel of the Little Calumet River forms the south boundary of the Southwest Crude Tank Field. A forest preserve used primarily for recreation is located less than two miles to the southeast of the facility. There are no wetlands, no habitats of endangered species, and no other sensitive environments within 2 miles of the site.

The PA/VSI identified the following 22 SWMUs and 2 AOCs at the facility:

Solid Waste Management Units

1. Outdoor Drum Storage Area
2. Sampled Product Waste Accumulation Areas
3. Cooling Tower Units
4. Bundle Cleaning Pad
5. Former Satellite Accumulation Storage Area
6. Former Storage Area
7. Satellite Accumulation Area
8. Storage Treatment Tanks
9. Former Container Storage Treatment Area
10. Former Container Storage Treatment Area
11. Former Container Storage Treatment Area
12. Former Storage Treatment Tank
13. Former Drum and Waste Storage Area
14. Former Container Storage Area
15. Former Container Storage Area
16. Former Waste Pile Area
17. Former Waste Piles and Impoundment Area
18. Former Impoundment Area
19. Wastewater Treatment System
20. Asbestos Satellite Accumulation Areas
21. Spent Catalyst Satellite Accumulation Areas
22. Water Treatment Systems for Boilers

Areas of Concern

1. Asphalt Tank
2. Underground Fuel Product Storage Tanks

At the Clark facility, there has been a release of an unknown type of petroleum product from Crude Tank #51 (AOC 1) onto the soil. Since no vertical secondary containment exists at this tank, ground water could possibly be contaminated also. A pipeline connection at the Storage Treatment Tanks (SWMU 8) shows evidence of past release to the soil via soil staining. This tank field also has no vertical secondary containment. Thus there is a moderate chance for ground water contamination also. Tank #51 (AOC 1), the Storage Treatment Tanks (SWMU 8), and Tank #59 (SWMU 19) all have no vertical secondary containment and are over 20 years old. RAI recommends that the soil and ground water be sampled for petroleum product contamination for all three areas.

Clark also has 2 underground fuel product storage tanks (AOC 2) built in the early 1970s. Due to the age of these units, there is a moderate chance of soil and/or ground water contamination. RAI recommends that both the soil and ground water be tested for petroleum contamination. The tanks should also be tested for integrity. Lastly, an unknown chemical deposit was spotted next to the cooling tower used by the Water Treatment System for Boilers (SWMU 22). This release, according to the facility representatives, is from the cooling tower unit. RAI recommends that this deposit be tested for caustic constituents. The potential for release to surface water is low since the facility has many diked areas that serve, as lateral secondary containment. The potential for a release to air is minimal except during a fire or explosion.

The potential for release to surface water is low since the facility has all tank farm areas diked. The process areas have wastewater and stormwater chains that could contain any lateral movement of release. Both types of drains lead into an on-site Wastewater Treatment System (SWMU 19).

The potential for a release to air is low if the units are kept closed or covered. The potential for volatility increases when the units are opened. The overflow pit and oil water separator units (SWMU 19) are exposed to air. These areas have high potential of release to air.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5. Resource Applications, Inc. (RAI), TES 9 Team member, provided the necessary assistance to complete the PA/VSI activities for Clark Oil and Refining Corporation (Clark).

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has generally exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading-unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release to the environment of hazardous waste or constituents has occurred or is suspected to have occurred on a non-routine and nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility.
- Obtain information on the operational history of the facility.
- Obtain information on releases from any units at the facility.
- Identify data gaps and other informational needs to be filled during the VSI.

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA.
- Identify releases not discovered during the PA.
- Provide a specific description of the environmental setting.
- Provide information on release pathways and the potential for releases to each medium.
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases.

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all SWMUs, identifying evidence of releases, initially identifying potential sampling locations, and obtaining all information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the Clark facility in Blue Island, IL.

The PA was completed on August 20, 1991. RAI gathered and reviewed information from the Illinois Environmental Protection Agency (IEPA) and from EPA Region 5 RCRA files. RAI also reviewed relevant publications from the United States Department of Agriculture (USDA), the United States Department of Commerce (USDC), the Federal Emergency Management Agency (FEMA), and the Illinois State Geological Survey (ISGS).

The VSI was conducted on August 21, 1991. It included interviews with Clark facility representatives and a walk-through inspection of the facility. Twenty-two SWMUs and 2 AOCs were identified at the facility. Field notes from the VSI are included in Attachment A. The VSI is summarized and 27 inspection photographs are included in Attachment B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location, past and present operations (including waste management practices), waste generating processes, release history, regulatory history, environmental setting, and receptors.

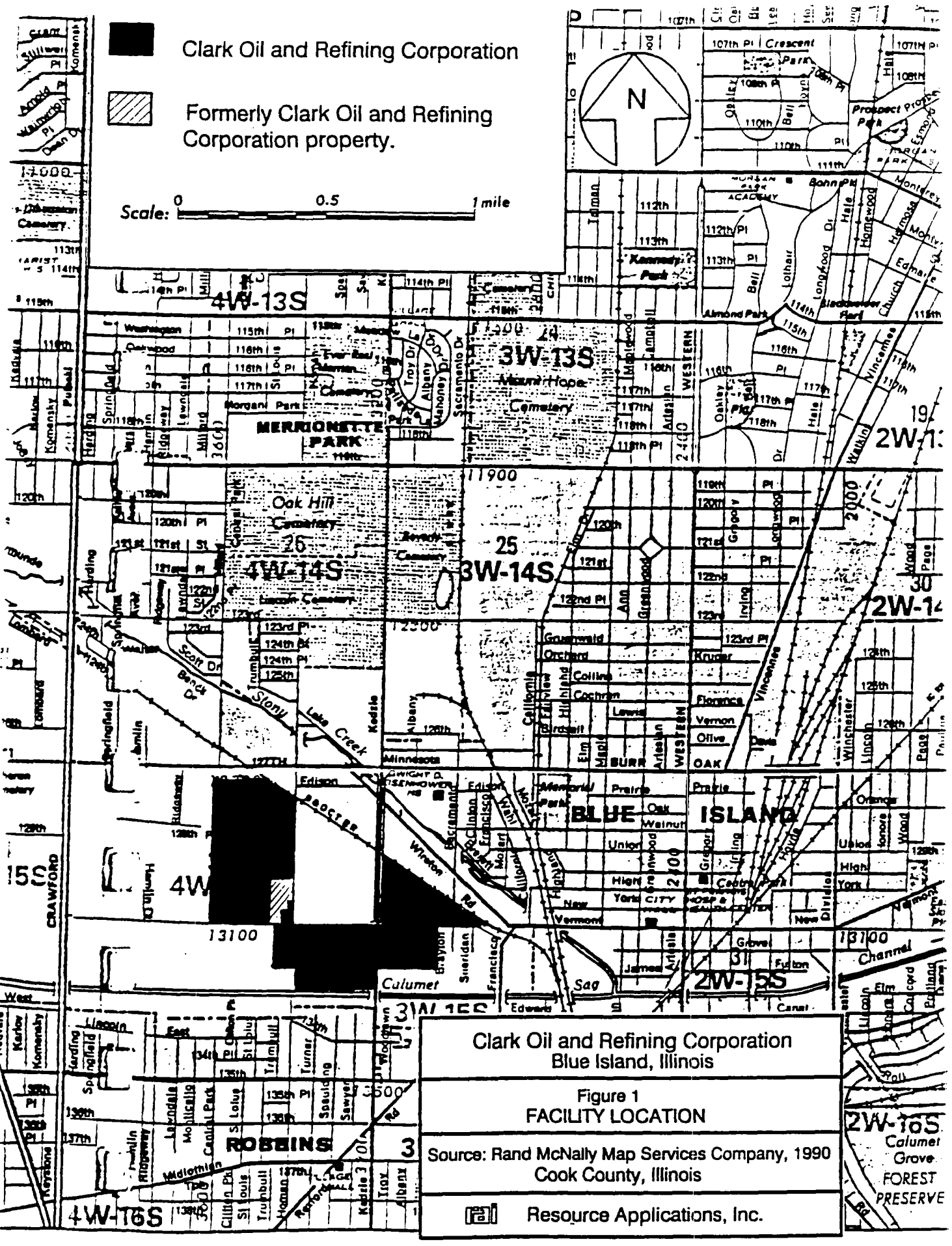
2.1 FACILITY LOCATION

The Clark facility is located at 131st and Kedzie Avenue in Blue Island, Illinois (Figure 1). The facility consists of three main parcels of land: 1) the Refinery Process Area to the northeast; 2) the Crude Oil Tank Field to the northwest; and, 3) a Crude Oil Tank Field and Barge Loading Area to the southwest. Clark previously owned a chemical plant situated next to the Northwest Crude Oil Tank Field. Clark sold this plant to BTL Industries in 1985. Clark also owns the land between the northwest Crude Tank Field and BTL Industries. Currently, it is owned by another division of Clark. This plot of land is referred to as the Clark's Blue Island Terminal. The facility covers 160 acres in three jurisdictions: Alsip, Blue Island, and unincorporated Cook County. The facility is approximately 22 miles southwest of downtown Chicago, at latitude 41° 39' 19" north and longitude 87° 42' 07" west (Clark, 1980b). The facility is situated within a mixed industrial and residential area.

2.2 FACILITY OPERATIONS

Great Lakes Refinery began operations in the mid-1920s. In 1943 it was sold to Emery Clark. In 1981 Emery Clark sold the refinery to Apex Corporation. Apex Corporation sold the refinery to Horsham Corporation in order to forestall bankruptcy in 1988 (Clark, 1991f). Both the Apex Corporation and Horsham Corporation maintained the "Clark" name. Clark employs three shifts of workers totalling about 280 people. The facility operates 24 hours a day, 7 days a week, 365 days a year.

Clark receives sweet crude oil via underground pipelines. The oil is diverted to several process areas where it is refined into different petroleum products such as gasoline, liquefied petroleum gas (LPG), fuel oil #2, fuel oil #6, asphalt, propane, and butane. Clark's Interim Status Hazardous Waste Part A Permit allows storage of hazardous waste for greater than 90 days (Clark, 1980b). However, current company policy allows only for less than 90-day storage of hazardous waste. All other wastes are stored on-site until there are sufficient quantities to make transport and disposal economical. The rate of generation for each waste depends on the quantity and type of product being produced. Facility SWMUs are listed in Table 1 and in Figures 2, 3, and 4. Facility AOCs are listed in Figure 3.



Clark Oil and Refining Corporation
Blue Island, Illinois

Figure 1
FACILITY LOCATION

Source: Rand McNally Map Services Company, 1990
Cook County, Illinois

Resource Applications, Inc.

TABLE 1

SOLID WASTE MANAGEMENT UNITS (SWMU)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Outdoor Drum Storage Area	No	Active
2	Sampled Product Waste Accumulation Areas	No	Active
3	Cooling Tower Units	No	Active
4	Bundle Cleaning Pad	No	Active
5	Former Satellite Accumulation Area	Yes	Inactive
6	Former Storage Area	Yes	Inactive
7	Satellite Accumulation Area	No	Inactive
8	Storage Treatment Tanks	No	Active
9	Former Container Storage Treatment Area	No	Inactive
10	Former Container Storage Treatment Area	No	Inactive
11	Former Container Storage Treatment Area	No	Inactive
12	Former Storage Treatment Tank	No	Inactive
13	Former Drum and Waste Storage Area	No	Inactive
14	Former Container Storage Area	No	Inactive

Note:

* A RCRA hazardous waste management unit is one that currently requires, or formerly required a RCRA Part A or Part B permit.

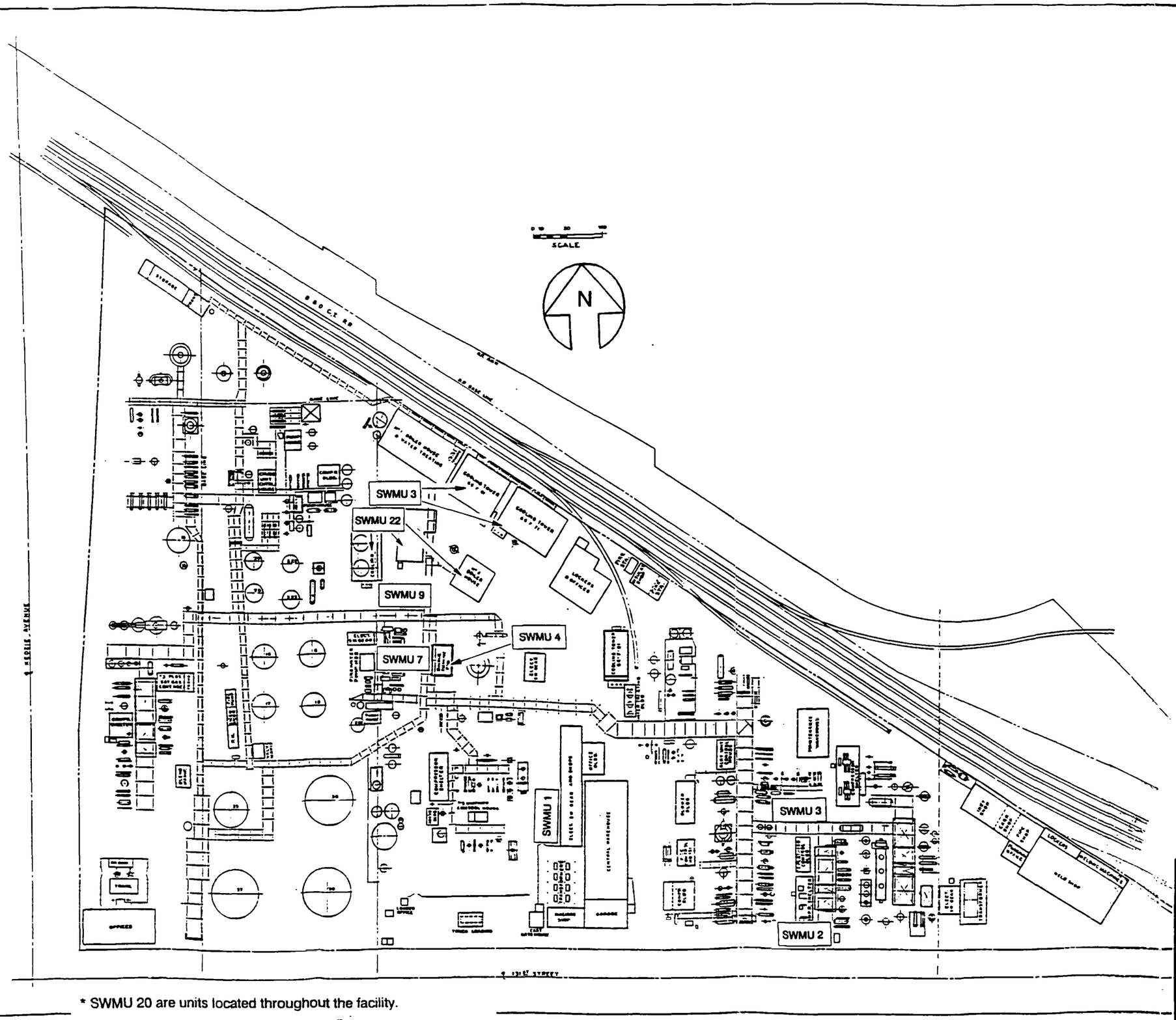
TABLE 1 (continued)

SOLID WASTE MANAGEMENT UNITS (SWMU)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
15	Former Container Storage Area	No	Inactive
16	Former Waste Pile Area	No	Inactive
17	Former Waste Piles and Impoundment Area	No	Inactive
18	Former Impoundment Area	No	Inactive
19	Wastewater Treatment System	No	Active
20	Asbestos Satellite Accumulation Areas	No	Inactive
21	Spent Catalyst Satellite Accumulation Areas	No	Active
22	Water Treatment Plant for Boilers	No	Active

Note:

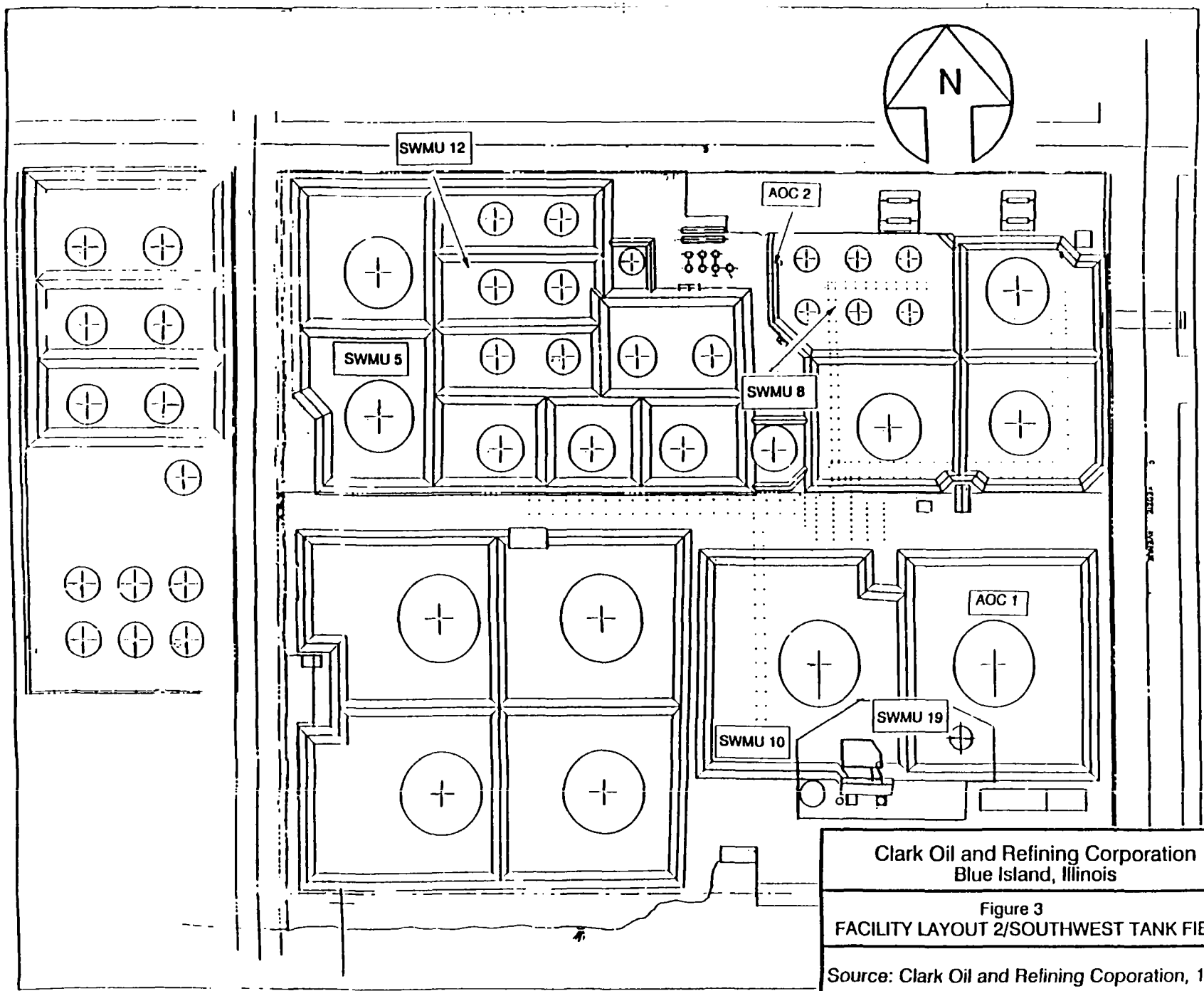
* A RCRA hazardous waste management unit is one that currently requires, or formerly required a RCRA Part A or Part B permit.



Clark Oil and Refining Corporation Blue Island, Illinois
Figure 2 FACILITY LAYOUT 1/REFINERY PROCESS AREA
Source: Clark Oil and Refining Coporation, 1987
Resource Applications, Inc.

* SWMU 20 are units located throughout the facility.

** SWMU 21 are units located throughout the Refinery Process Area.



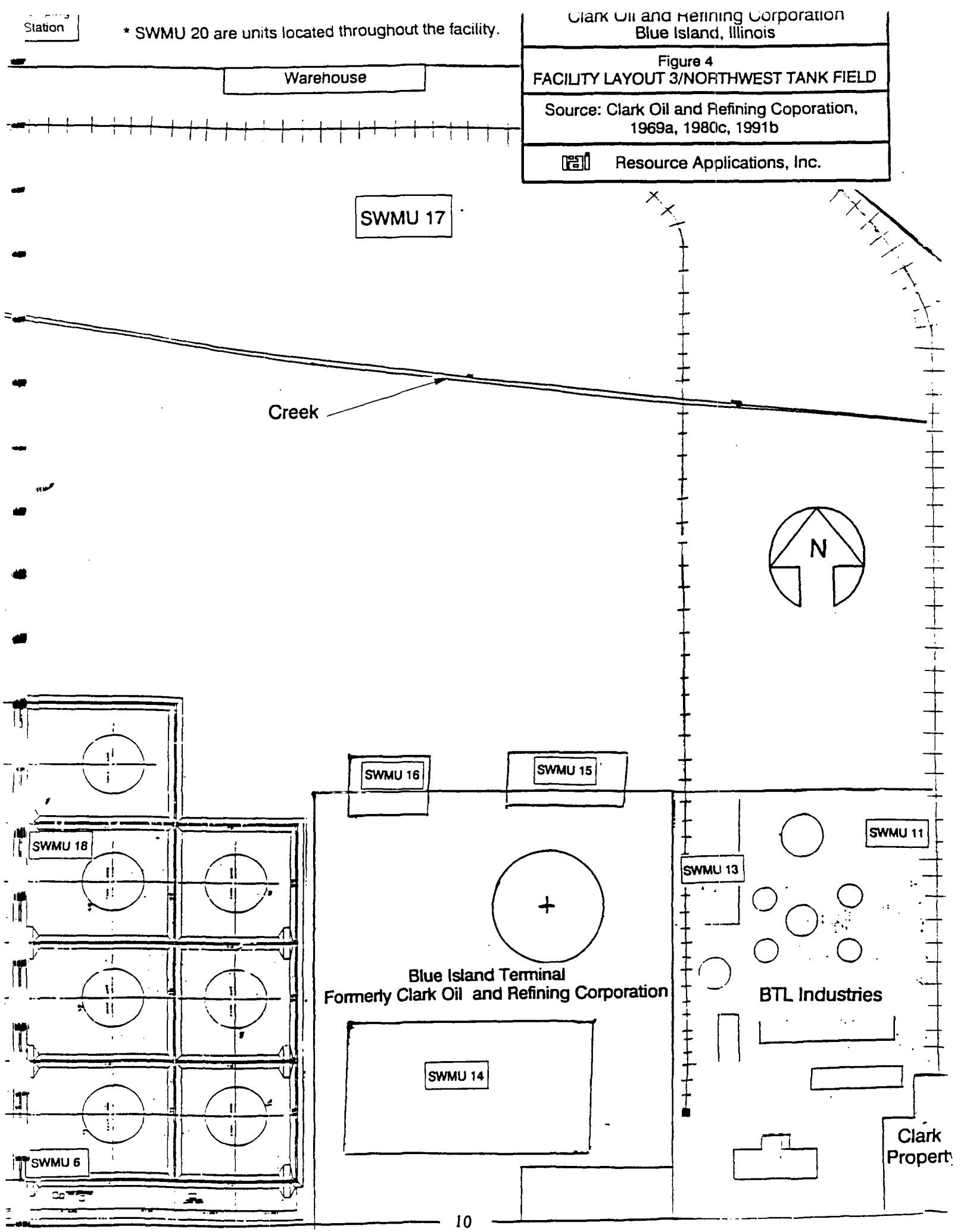
Clark Oil and Refining Corporation
Blue Island, Illinois

Figure 3
FACILITY LAYOUT 2/SOUTHWEST TANK FIELD

Source: Clark Oil and Refining Coporation, 1969

Resource Applications, Inc.

* SWMU 20 are units located throughout the facility.



Clark Oil and Refining Corporation
Blue Island, Illinois

Figure 4
FACILITY LAYOUT 3/NORTHWEST TANK FIELD

Source: Clark Oil and Refining Coporation, 1969a, 1980c, 1991b

Resource Applications, Inc.

Wastewater is generated in very large volumes at the Clark facility. The wastewater is treated in Clark's Wastewater Treatment System (SWMU 19). This system recovers most of the oily residue from the wastewater. The oily residues are re-entered into the Refinery Process. This Wastewater Treatment System (SWMU 19) has generated dissolved air flotation (DAF) float (K048), American Petroleum Institute (API) separator sludge (K051), and slop oil emulsion solids (K049) since 1968. These waste streams are used for off-site fuel blending. All specific source waste streams at Clark are RCRA-listed hazardous wastes due to the possibility of high levels of cadmium and lead. The Clark facility receives its water supply from Lake Michigan through the towns of Alsip and Blue Island. The Clark facility also has a Water Treatment System for Boilers (SWMU 22). This unit generates non-hazardous sludge and wastewater.

Clark generates bundle cleaning sludge (K050) from heat exchanger cleaning on the Bundle Cleaning Pad (SWMU 4) and basin sludge from the Cooling Tower Units (SWMU 3). The sludges produced from cleaning are power-washed into the Wastewater Treatment System (SWMU 19). Scrap sulfur is also generated during the maintenance and servicing of the desulfurization unit within the Refining Process Area and stored in a Satellite Accumulation Area (SWMU 7). PCB-contaminated oil is generated in small quantities during transformer servicing and is stored in the Outdoor Drum Storage Area (SWMU 1). Spent 1,1,1-trichloroethane (TCA) is generated from the part cleaning dip tank. This waste is also stored in the Outdoor Drum Storage Area (SWMU 1). Safety-Kleen removes the TCA for reprocessing. Asbestos waste is engendered when pipe insulation is removed. This waste is placed in roll-off boxes at the locations (SWMU 20) of the asbestos abatement. Sulfur catalyst, sand, clay, and oily wastes are generated from the cleanup of spilled petroleum product.

Various spent catalysts are generated during the production of gasoline. The waste is placed in drums at various locations (SWMU 21) within the Refinery Process Area. When enough of this waste is collected, it is taken to an outside firm. This firm reprocesses it and gives it back to Clark.

In Clark's Interim Status Hazardous Waste Part A Permit Application, a facility map was provided showing various SWMUs. Most of these SWMUs are currently unidentifiable. The facility representatives claimed that these units did not exist. The representatives also stated no records existed "that they knew of" (Clark, 1991b).

2.3 WASTE GENERATING PROCESSES

Most of the wastes generated at the Clark facility are from the Wastewater Treatment System (SWMU 19) (Table 2). All of the refining processes release wastewater. This wastewater enters the Wastewater Treatment System (SWMU 19) through a vast pipeline system. Steel drains connect to the system throughout the whole facility. Eleven electric sump pumps pump the wastewater to the Wastewater Treatment Area in the Southwest Crude Tank Field (Clark, 1990). Some of this wastewater is treated in an alkylation neutralization pit before being pumped to the Wastewater Treatment Area. After it reaches the Wastewater Treatment Area, it is pumped into the aboveground steel 5,100-barrel Tank #59. If the quantity of wastewater is greater than the volume that Tank #59 can hold, the wastewater overflows into a 72,000-gallon pit (Clark, 1991d). This pit is made of concrete and is pitched to one side. As the wastewater settles in Tank #59, the oil floats to the top. The oil is pumped to one of two in-ground API oil water separators. The oil wastewater is settled allowing for oil to float on top and the sludge to collect on the bottom. The oil is then pumped to the #60s Storage Treatment Tanks (SWMU 8) for further processing. The water from both Tank #59 and the API oil water separator are pumped into the DAF unit which saturates the wastewater with air bubbles causing the oil to float to the top of the unit. The oil is skimmed off and pumped back to #60s Storage Treatment Tanks (SWMU 8). The water is drained into the Metropolitan Water Reclamation District Sewer System. The sludge (K051) material is vacuum pumped to Tank #66 (SWMU 8). Overflow pit sludge bottoms are also vacuum pumped to Tank #66. Tank #66 is a 5,100-barrel Sludge Tank (Clark, 1990). Tanks #63 and #65 (SWMU 8) are oil water separator tanks that operate like Tank #59. Since each type of oil has a different specific gravity many different layers of oil are formed. Solids settle at the bottom with water lying directly above. The oils are piped back to the Refinery Process Area for reuse. The water is sent back to the overflow pit. The sludge is pumped to Tank #66. All wastewater treatment sludges are RCRA listed wastes because of possible high levels of chromium and lead constituents. These sludges are removed off-site and used for fuel blending.

The Wastewater Treatment System (SWMU 19) generates several types of hazardous sludge waste. The DAF unit generates float (K048). This waste is pumped out of the unit and pumped into Tank #66 (SWMU 8) where it settles with other types of sludge waste. This waste stream has been produced since 1968 and is generated in varying quantities depending upon the level of production in a given year.

TABLE 2

SOLID WASTES

Waste/EPA Waste Code	Source	Primary Management Unit
Dissolved Air Flotation Float/ K048	Wastewater Treatment System	SWMU 19, 8
API Separator Sludge/K051	Wastewater Treatment System	SWMU 19, 8
Slop Oil Emulsion Solids/K049	Wastewater Treatment System	SWMU 19, 8
Heat Exchanger Bundle Cleaning Sludge/K050	Heat Exchanger Bundle Cleaning	SWMU 4, 19
Cooling Tower Basin Sludges	Cooling Tower Basin Cleaning	SWMU 3, 19, 22
Scrap Sulfur	Sulfur Pit and Vessel Cleaning	SWMU 7
Leaded Tank Bottoms/K052	Storage Tank Cleaning	SWMU 5, 6
Spent 1,1,1-trichloroethane/ F001	Parts Cleaning Process	SWMU 1
Oil Product Drippage	Product Sampling Process	SWMU 2
Asbestos	Pipe Insulation Removal	SWMU 20
Scrap Resin	Chemical Plant	SWMU 13
PCB-contaminated Oil	Transformer Servicing	SWMU 1
Spent Catalysts	Gasoline Production	SWMU 21

The API separator units generate hazardous sludge (K051) that is also pumped to Tank #66 (SWMU 8) where it settles with other types of sludge. The sludge is pumped to Tank #66 when the sludge inhibits the performance of the unit. Before 1989, this sludge was pumped directly into tanker trucks and shipped off-site for fuel blending.

Slop oil emulsion solids (K049) are generated from the oil interface from Tanks #63 and #65 (SWMU 8). This waste is pumped to Tank #66 (SWMU 8) for storage. This waste stream has been generated in varying quantities since 1968. Tank #66 (SWMU 8) stores DAF float (K048), API separator sludge (K051), and the slop oil emulsion solids (K049). In 1990, approximately 324,240 gallons of these three sludges were generated at the facility. This combined sludge waste is pumped into tanker trucks provided by American Waste Haulers of Maywood, Illinois and taken to Environmental Waste Resources of Coal City, Illinois for fuel blending (Clark, 1991a) within 90 days of generation.

Heat exchanger bundle cleaning sludge (K050) is generated during the cleaning of heat exchangers. Heat exchangers are a series of bundled metal tubes that have water flowing through them. Half of these tubes have heated water in them and half have cool water in them. The hot tubes warm the cool tubes so that certain refinery processes could recycle the heat displaced in the water. Sometimes dirt, debris, and sludge clog the tubes. When this occurs, the refinery disassembles the heat exchangers and places them on the Bundle Cleaning Pad (SWMU 4). Then the sludge in the tubes is drilled or power sprayed out. The sludge and wastewater are drained into a trench beneath the pad. This trench leads into the Wastewater Treatment System (SWMU 19). This cleaning process has occurred once every three or four years since the mid-1970s.

Cooling tower basin sludges are generated from the cleaning of the 2 process cooling tower basins (SWMU 3). These units are used to cool heated process water. Before 1988 the towers had to be shut down in order for the units to be cleaned. The sludges were pumped into tanker trucks and sent to a landfill for disposal. Since 1988 the basin sludges are power washed into the drains that lead into the Wastewater Treatment System (SWMU 19).

Cooling tower basin sludge is also generated from the cleaning of the cooling tower used for cooling the facility's boiler water. Calumet Sag Channel water is pumped into the Water Treatment System (SWMU 22). This water is then treated with water softeners. The water is used as once-through cooling water. The water is pumped into the cooling tower unit. Cooling tower basin sludge is generated. This waste is pumped into a Wastewater Treatment System (SWMU 19) sewer. The wastewater is drained into the Metropolitan Water Reclamation District Sewer System.

Scrap sulfur has been generated from the cleaning of the Sulfur Pits and Vessels (SWMU 7) since 1976 when the desulfurization process area was built. When a sulfur pit or vessel is shut down for cleaning or maintenance, the molten sulfur is pumped directly into tanker trucks and sold as product. The unpumpable sulfur is allowed to cool. Jackhammers are used to crack the hardened sulfur. The sulfur rock is removed and placed into 55-gallon steel drums. This waste is then shipped off-site by flatbed truck to a landfill for disposal. This waste is generated only once every four or five years or when the unit is shut down for maintenance.

Leaded tank bottoms (K052) were occasionally removed in the past during tank cleaning. This waste was generated during the storage of leaded gasoline. These leaded tank bottoms were pumped or shoveled into plastic lined roll-off boxes. Currently, Clark no longer produces leaded gasoline. In 1981, 20 cubic yards of leaded tank bottoms were removed from Crude Tank #46 (Clark, 1981). This waste was shoveled into a lined roll-off box within the diked area (SWMU 5) outside Tank #46. This roll-off boy unit was moved to the Northwest Tank Field in the diked area (SWMU 6) surrounding Crude Tank #801. This waste was transported by General Drainage of Gary, Indiana to Waste Management of Illinois' CID landfill in Calumet City, Illinois (Clark, 1981). In 1988, Clark generated 12,120 gallons of leaded tank bottoms (Clark, 1989). The last shipments of this waste were transported in 1988 by Independent Waste of Gary, Indiana to CID Landfill for land disposal (Clark, 1989).

Spent 1,1,1-trichloroethane (TCA) (F001) is generated from the part cleaning dip tank. Before 1990 this degreaser never became a waste. It was used for cleaning pipes and pumps throughout the facility. Most of the spent TCA evaporated into the air during this cleaning. Since, 1990 year or so spent TCA is no longer used for cleaning pumps and pipes. Hence the spent TCA is vacuum pumped into steel 55-gallon drums and placed on plastic pallets in the Outdoor Drum Storage Area (SWMU 1). Clark generated 855 gallons of spent TCA in 1990 (Clark, 1991a, 1991b). This waste was picked up by Safety-Kleen for incineration/reprocessing.

Occasionally sampling of product is performed to test for quality. The samples are tested on-site. The samples cannot be considered waste after testing, since the samples are deposited directly into the Crude Unit for reuse. The Crude Unit is the location where incoming crude oil is diverted to all refining processes. However, 30-gallon barrels stored in SWMU 2 are used below the sampling spigots in case drippage or overflows occur during sample can filling. This overflow material is waste. The barrels are emptied into the one of the Wastewater Treatment System's sumps, which pump wastewater to the oil water separators (SWMU 19).

Asbestos is generated infrequently when pipe insulation is replaced. This removal process occurs throughout the facility. Each location of asbestos removal and accumulation is a SWMU. These numerous locations will be referred to as Asbestos Satellite Accumulation Areas (SWMU 20). When there is asbestos waste, it is wrapped in plastic and placed into a roll-off box. This waste is then sent to a landfill for disposal.

Scrap resin was generated before 1985 at Clark's Chemical Plant now owned by BTL Industries. This scrap resin was placed into 55-gallon steel drums and stored in a Drum and Waste Storage Area (SWMU 13), also currently located in BTL Industries. This waste was transported by BFI to ESL of Joliet for landfilling (Clark, 1991d).

Polychlorinated Biphenyl (PCB) contaminated oil is generated in small quantities. Every other year Clark hires an outside contractor to service its transformers. Sometimes servicing requires the removal of the dielectric which may contain PCB oil. This waste is removed by the contractor to an unknown location (Clark, 1991c).

Sulfur catalyst, sand, clay, and oil wastes are generated from the cleanup of spilled asphalt, oil, etc. This waste stream is generated only when a spill occurs. The rate of generation for this waste stream depends upon the size and type of spill. This waste is stored near the spill site in a roll-off boxes when needed. This nonhazardous waste is shipped to a landfill when economically feasible.

Various spent catalysts are generated during the production of gasoline. The rate of generation depends upon the rate of gasoline production. These catalyst fines are placed into 55-gallon steel drums at several Spent Catalyst Satellite Accumulation Areas (SWMU 21) throughout the Refinery Process Area. This material is shipped off-site when economically feasible for recycling and/or recovery of the catalyst. The recovered catalyst is sent back to Clark for reuse.

Storm water drains are present throughout the Clark facility. These drains lead into a pipeline separate from the wastewater pipeline. The storm water pipeline system flows to the Wastewater Treatment Area in the southwest crude tank field (SWMU 19). The storm water flows into the API oil water separators before discharging into the Metropolitan Water Reclamation District Sewer System. If heavy rains occur, the storm water may intermix with the wastewater in Tank #59. Clark is attempting to get a NPDES permit for storm water drainage into the Calumet Sag Channel. Clark has cutoffs within its storm water pipeline that will allow the storm water to flow into the Channel during heavy downpours after the NPDES permit is approved.

2.4 RELEASE HISTORY

On January 18, 1973 an unexpected flash rainstorm of high intensity caused water in a 6-foot diameter waste and storm water sewer to overflow an oil retention baffle and discharge an estimated maximum of 50 gallons of retained oil into the Calumet Sag Channel (Clark, 1991b). Retention booms were used to entrap the oil after which it was skimmed from the water surface. To prevent a reoccurrence, Clark installed a permanent surface skimmer, complete with a pump, that enables the operator to readily accomplish removal of surface oil from behind the baffle during periods of higher than normal flows (Clark, 1990).

At a 1987 IEPA site inspection, benzene was observed coming out of the ground at BTL Industries (IEPA, 1988). Clark sold BTL Industries its Chemical Plant in 1985. Soil samples were taken but RAI was unable to obtain copies of the analytical results. Also in June of 1987, a 6 mile long oil sheen was observed by a Metropolitan Water Reclamation (MWRD) District helicopter on the Calumet Sag Channel originating from Clark (IEPA, 1987a, 1987b). Clark boomed the discharge off. The discharge was from a pipe that should not have had a connection with crude pipelines. No further information was made available to RAI about this incident.

In 1989 leakage of oil product from Tank #52 contaminated the soil. The spill was pumped into the wastewater system. The contaminated soil was removed to CID Landfill for land disposal. Clark also cleaned and/or replaced all contaminated sewer drains (Clark, 1991c). In 1989 a fire occurred on a gas tank flange. Clark's own fire team put out the fire (Clark, 1991c).

On May 14, 1990 a 6-inch flange gasket on Tank #804 (a 119,300-barrel tank) in the Northwest Crude Tank Field broke spilling "gas-oil" into the Tank #804 dike (Clark, 1990). This material normally would be contained in the dike. Each dike within the #800 and terminal tank farms has a drain and a control valve which is left closed. The valves are manually opened to drain rainwater. Rainwater is drained to the Alsip storm sewer located on the west side of the #800 tank farm. The Alsip sewer flows north and discharges into Mosquito Creek. Mosquito Creek in the past flowed east, but currently it flows west. The problem arose when the control valve on the Tank #804 dike did not function properly. On or about May 14, 1990 the 6-inch flange was repaired. During this time it was not known that the #804 dike control valve was malfunctioning. The contaminated soil was removed on or about May 17, 1990 and properly disposed (Clark, 1990). On May 23, 1990, the malfunctioning control valve was found and recorded. It was repaired on May 25, 1990. Gas-oil has a very high viscosity, once it drains it sets up as a solid. On June 8, 1990 after a period of rain, the #800 tank farm discharged its collected rainwater and

the warm temperature was enough to liquefy the gas-oil. The gas-oil then flowed into the Alsip storm sewer and subsequently in to Mosquito Creek. To prevent reoccurrences, Clark checks all control valves on a routine basis to assure proper operation and control valves are checked after any uncontrolled spill (Clark, 1990).

On May 5, 1991, Tank #38 overflowed. Asphalt poured onto the ground and hardened. Sand was placed on the spill to absorb some of the asphalt's oily nature. Clark remediated the ground by removing 200 cubic yards of contaminated soil. This waste was placed in a plastic lined roll-off box and taken to CID Landfill for disposal (Clark, 1991c).

During the VSI on August 21, 1991, three releases to the environment were noted. First, in the Desulfurization Plant Area (Refining Process Area), sulfur powder product was observed on the on-site soil. In the HF Alkylation Plant Area, a condensate knockoff tank was observed releasing steam and mist onto the cement flooring. This water then flowed into a wastewater drain within 5 feet of the unit. This release is not a normal event. A pump normally pushes the condensate into the Wastewater Treatment Plant (SWMU 19). This pump failed, thus triggering the manually controlled release. Also noted was ponding of an oily substance around the base of Tank #51. This tank stores asphalt product.

2.5 REGULATORY HISTORY

Clark filed its Permit Application for Treatment Works and Wastewater Sources on October 24, 1972 (Clark, 1972). Clark applied for a renewal of its operating permit in 1974. IEPA notified Clark on October 31, 1974 that Clark's renewal application was an incomplete submission. IEPA requested Clark to add specific information about its cyanide concentrations in its wastewater effluent (Clark, 1974). Clark filed a Notification of Hazardous Waste Activity designating the facility status as a generator and treatment/storage/disposal firm (Clark, 1980a). Their Part A permit application was filed on November 17, 1980 stating that 700 tons of K048 waste; 2,600 tons of K049 waste; 1 ton of K050 waste; 1,200 tons of K051 waste; 200 tons of K052 waste; 30 tons of D001 waste; 74 tons of D002 waste, and 791 tons of D003 waste were generated per year (S01, S02, T01, T02, T04) (Clark, 1980b). EPA verified Clark's Hazardous Waste activity on September 28, 1981 (EPA, 1981).

Included with Clark's Part A permit application were facility drawings indicating six container storage units, waste pile and surface impoundment units, and tank storage and treatment units. During the VSI, Clark claimed that these units never existed, as they had originally been identified by Clark on their Part Application and never removed in subsequent Part A applications. RAI considered them

SWMUs and proceeded to investigate the location these units were to have occupied. Very little informaiton was available regarding these units.

On August 2, 1983 Clark requested EPA for permission to modify its Part A application (Clark, 1983). Clark wanted to change its Interim Status to generator only. Clark claimed that it had never stored, treated, or disposed of hazardous wastes for greater than 90 days. EPA responded to this request on January 24, 1984. EPA notified Clark that its request to modify its Interim Status was not signed and certified by an authorized person. Also EPA reminded Clark that if a treatment/storage/disposal (TSD) unit was used for hazardous waste, that it must go through closure before the modification to status is approved (EPA, 1984a). Clark failed to reply to this response. On December 18, 1984 EPA requested that Clark review current regulations before requesting withdrawal of Part A - Interim status (EPA, 1984b). On January 10, 1985, Clark once again requested a withdrawal of its Part A Permit (Clark, 1985a). EPA responded to this second request for withdrawal on June 12, 1985. EPA again informed Clark that its request was not signed and certified by an authorized person. EPA reminded Clark that if any unit was previously used to treat/store/dispose any hazardous waste, the unit would have to go through closure (EPA, 1985b). For a third time Clark requested EPA for permission to modify its permit on July 24, 1985 (Clark, 1985b). Clark reemphasized its request on October 8, 1985. Clark restated that it only generates waste. Clark mentioned that a roll-off box of leaded tank bottoms (K052) was inadvertently stored on-site for longer than 90 days while awaiting disposal permit issuance from IEPA (Clark, 1985c). In a followup letter, Clark explained this issue further. Clark informed EPA that it had waited 64 days for a disposal permit to be issued by IEPA. Although the leaded tank bottoms are a listed (K048) waste, characteristic category testing found the waste nonhazardous. During conversations with facility representatives for this VSI, as of August 21, 1991 Clark is still a generator and TSD facility (Clark, 1991c).

Over the past nine years, IEPA has conducted several inspections of Clark's waste management practices. On March 24, 1982, an IEPA Interim Status Standards inspection was performed at the facility (IEPA, 1982). This inspection report is illegible. RAI was unable to obtain a good copy. On August 12, 1987 a RCRA inspection was performed to determine the Interim Status of this facility. No specific conclusions were drawn from the visit. No violations were cited, although a fuel tank was found leaking oil into a diked containment area (IEPA, 1987a). A RCRA Land Disposal Restriction Inspection was performed on November 16, 1989 (IEPA, 1989). Clark was found to be operating in compliance with Land Disposal Restriction regulations. On May 6, 1991 IEPA notified Clark that operator certification records indicated that Clark's Wastewater Treatment System was not being operated by a properly certified operator. IEPA requested Clark to respond within 30 days of its plan to alleviate this noncompliance (IEPA, 1991a).

Clark also has 22 air permits for its Van Air Dryer units at 42 different on-site locations (Clark, 1991g, IEPA, 1991b). These units dry fuel gas lines before emitting steam to the air. These units do not generate waste.

All of Clark's wastewater discharge and surface waater runoff is directed to the Metropolitan Water Reclamation District Sewer System. Clark has no NPDES permit.

2.6 ENVIRONMENTAL SETTING

This section describes the climate, flood plain and surface water, geology and soils, and ground water in the vicinity of the Clark facility.

2.6.1 Climate

The Clark site is located at 131st and Kedzie Avenue in Blue Island, Illinois, a suburb southwest of Chicago. It is approximately 11 miles southeast of Midway Airport, the location of the nearest U.S. National Weather Service Office. With no significant topographical barriers to airmass flow, the climate in the area is typically continental with cold winters, warm summers, and frequent short-period fluctuations in temperature, humidity, cloudiness, and wind direction (Ruffner, 1985). The average annual daily temperature is 50.6°F, while the lowest average minimum temperature is 17.6°F occurs in January and the highest average monthly maximum temperature of 81.8°F occurs in July. The prevailing wind direction is from the west-southwest, and the average wind speed is 10 miles per hour. Average annual precipitation, as a water equivalent is 34.33 inches. Average annual net precipitation is 4.44 inches (USDC, 1968). In winter, about one-half of the precipitation (10 percent of the annual total) falls as snow. During the fall, winter, and spring, the pattern of precipitation tends to be more uniform both over time and distance, whereas in summer, rainfall is often locally heavy and variable. The 1-year, 24-hour maximum rainfall recorded in the area over a 34-year period is 6.24 inches (Ruffner and Bair, 1985).

2.6.2 Flood Plain and Surface Water

The facility is at an approximate elevation of 600 feet above mean sea level. The Calumet Sag Channel forms the south boundary of the Southwest Crude Tank Field. Three quarters of a mile downstream from the site, Stony Creek merges with the Calumet Sag Channel. Two miles further downstream, the Calumet Sag Channel merges with the Little Calumet River. Eight miles further downstream, the Little Calumet River merges with the outlet from Lake Calumet to form the Calumet

River, which in turn empties into Lake Michigan 6 miles beyond this junction. From the Calumet Sag Channel to the Little Calumet River's junction with the Calumet River, the riverbanks run a course of almost constant elevation. Beyond this junction the riverbanks run at an almost constant elevation but are bordered, up to one-half mile from either bank, by swamps, marshes, and poorly drained land (USGS, 1977). The site locale is classified as a Zone C flood plain area, that is, an area of minimal flooding outside the 500-year flood plain limit (FEMA, 1983).

2.6.3 Geology and Soils

Surface features in the Chicago area are largely the result of glaciation and almost completely cover the underlying bedrock surface (Willman, 1971). The facility is underlain by a soil complex known as the Urban land-Selma-Oakville. Urban land comprises 50 percent of this soil complex and consists of soils that have been cut, graded, and filled and that are obscured by buildings and pavements. The Selma soil series, comprising 20 percent of the soil complex, is characterized by deep, poorly drained moderately permeable soils on outwash and lake plains. They are formed in loamy, calcareous glacial outwash and have slopes ranging from 0 to 2 percent. Oakville soils make up 20 percent of the complex and consist of deep, well-drained, very rapidly permeable soils on sand ridges. These soils formed in lake-deposited beach ridges, and have slopes ranging from 2 to 7 percent. The remaining soils in this complex have a common quality of being drained (USDA, 1979).

Soils in the Chicago area have developed over the past 13,500 years through weathering of the immediately underlying glacial deposits left behind, for the most part, by retreating Wisconsin-age glaciers. In the vicinity of the site, these glacial deposits consist largely of silt and clay, with occasional lenses of sand and gravel reworked glacial deposits. Commingled with these deposits in the Lake Calumet region are areas of made-land -- former lake-bottom land reclaimed using rubbish as landfill material. Approximately 45 feet of glacial deposits/made-land overlie the uppermost bedrock unit of Silurian age. In the Chicago area, Silurian age formations are almost entirely dolomite, whose composition ranges from extremely argillaceous, silty, and cherty to exceptionally pure. In the site vicinity, it is about 450 feet thick. Beneath the Silurian dolomite are successively older rocks of Ordovician and Cambrian age. Within each of these two systems are distinctive sandstone formations which serve as major aquifer systems in the Chicago area. The base of the Cambrian is in contact with the crystalline pre-Cambrian basement at an inferred depth of 4,500 feet (Willman, 1971).

2.6.4 Ground Water

In northeastern Illinois, ground water is obtained from four major aquifer systems: the glacial drift system, the shallow bedrock system, and two deep bedrock systems. They are distinguished by their hydrologic properties and recharge source areas (Hughes, et al., 1966). In central Cook County, the glacial drift is thin, and sand and gravel deposits are correspondingly thin or absent. Here shallow deposits are mainly fine-grained or silty, and virtually all drilled wells penetrate solid bedrock for ground water supplies (Bergstrom, et al., 1955). The shallow bedrock aquifer system in the vicinity of site underlies the glacial drift system and comprises the Silurian dolomite formations and underlying late Ordovician shales. The upper boundary of this system is the top of the bedrock, and the lower boundary is the top of a sequence of formations of middle Ordovician age called the Galena-Platteville Dolomite. Water from this aquifer is obtained from fractures and solution openings in the Silurian dolomite beds. As a result, individual well yields vary widely, depending upon the water volume present in the drilled openings. Recharge is attained by percolation of local precipitation through the overlying glacial drift and/or permeable materials within the drift sequence itself (Hughes, et al., 1966). The shallow bedrock system can serve as a source for domestic, industrial, and municipal water supplies. Domestic wells usually obtain water from the upper 15 feet to 75 feet of the dolomite, while wells serving municipalities and industries generally penetrate 50 feet to 250 feet into the dolomite (Bergstrom, et al., 1955).

The deep bedrock aquifer systems include the Cambrian-Ordovician aquifer system and the Mt. Simon aquifer system. The former comprises the Glenwood and St. Peter Formations of the middle Ordovician series and the Ironton and Galesville Sandstone Formations of the late Cambrian. The top of the Cambrian-Ordovician aquifer is at the top of or within the Galena-Platteville Dolomite, which serves as the lower boundary for the shallow bedrock aquifer system. In the site locale, the contact between the Galena-Platteville Formations and the Glenwood Formation occurs at a depth of about 800 feet below the ground surface. The bottom of the Cambrian-Ordovician aquifer system is located in the impermeable shales and dolomites of the upper and middle parts of the Cambrian Eau Claire Formation, at a depth of about 1,400 feet below the ground surface. Thus, this aquifer system spans a thickness of 600 feet (Hughes, et al., 1966).

Within the Cambrian-Ordovician aquifer system, the Glenwood-St. Peter Sandstone unit is widely utilized as an aquifer where water requirements are less than 200 gallons per minute (gpm). This unit has a permeability of approximately 15 gallons per day per square foot (gpd/sq.ft). The Ironton-Galesville Sandstone unit is the major producing unit in the Cambrian-Ordovician aquifer because it has the most

consistent permeability (35gpd/sq.ft) and thickness (200 ft.) of the aquifers in northeastern Illinois (Hughes, et al., 1966).

Recharge to the Cambrian-Ordovician aquifer system is mostly from western McHenry, Kane and Kendall Counties where the rocks crop out at the surface or lie immediately below the glacial drift. Additional recharge occurs directly from leakage of precipitation downward through the shallow bedrock aquifer system.

The second deep bedrock aquifer system - the Mt. Simon aquifer - is situated on top by the relatively impermeable shales and dolomites of the upper and middle parts of the Eau Claire Formation. These units function as an aquitard and water in the Mt. Simon aquifer is about 1,750 feet beneath the ground surface. Although the Mt. Simon Sandstone is nearly 2,000 feet thick, only the uppermost 275 feet of sandstone yield potable water because, below that depth, the water is too highly mineralized for most purposes (Hughes, et al., 1966). The average permeability of the Mt. Simon aquifer system is approximately 16 gpd/sq. ft (Hughes, et al., 1966) and recharge is largely from the outcrop region of Cambrian rocks in central southern Wisconsin (Willman, 1971).

2.7 RECEPTORS

The Clark facility is located at the intersection of 131st and Kedzie Avenue is in a mixed industrial and residential area approximately 22 miles southwest of downtown Chicago, Illinois (Figure 1). This facility lies in three jurisdictions: Alsip, Blue Island, and unincorporated Cook County. The population of Alsip is 17,134 (Rand McNally, 1991). The population of Blue Island is 22,700 (McNally, 1991). The population of neighboring Chicago is approximately 2.8 million. The facility is bordered on the east by light industry and residences; on the west by heavy industry; on the north by FSC Paper Company, Century Oil Company, and a florist; and, on the south by the Calumet Sag Channel. The land on the southside of the Channel is owned by the Metropolitan Water Reclamation District. The proposed Robbins incinerator is suppose to be built there in the near future. BTL Industries, Clark Blue Island Terminal, and Martin Oil are situated between the Refinery Processing Area and the Northwest Crude Tank Field. Residential areas are a within a mile in all directions from the facility. The nearest school is a half-mile to the northeast of the facility.

The facility is surrounded by a 6-foot chain link fence topped with barbed wire. All entrances to the facility are locked or guarded at all times. The gates that are guarded, are so, 24 hours a day, 7 days a week.

Drinking water is supplied to the facility by the Towns of Alsip and Blue Island from Lake Michigan. There are no potable ground water wells within a two mile radius of the site (Clark, 1991f). The facility lies next to the Calumet Sag Channel. Mosquito Creek runs through the Northwest Crude Tank Field. Midway Airport is approximately 11 miles southwest of the facility. The Clark facility discharges all storm water and pretreated wastewater into the Metropolitan Water Reclamation District Sewer System.

A forest preserve used primarily for recreation is located within two miles to the southeast of the facility. There are no wetlands, no habitats of endangered species, and no other sensitive environments within two miles of the site.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 22 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of release, and RAI observations.

SWMU 1 **Outdoor Drum Storage Area**

Unit Description: This 6-foot by 18-foot storage area is used to store hazardous and special waste, as well as asphalt product in 55-gallon steel drums (Photo 1). The hazardous waste is stored for less than 90 days per current company policy. The unit is located within the Refinery Process Area.

Date of Startup: 1990.

Date of Closure: This unit is currently active.

Wastes Managed: 1,1,1-trichloroethane (TCA)/F001, PCB-contaminated oil/special waste.

Release Controls: This unit is located outdoors. The drummed wastes are on plastic 3-foot by 4-foot pallets on cement pavement.

History of Release: No releases have been documented at this unit.

Observations: Three drums of spent TCA (F001) and 1 drum of PCB-contaminated oil (special) was observed on a plastic pallet. Seven drums of asphalt product were also observed within the unit. The drums were sealed, labeled, and dated. There are some stains on the cement surface of the storage area. The drums appeared to be in sound condition.

SWMU 2 **Sampled Product Waste Accumulation Areas**

Unit Description: These 3-foot by 3-foot areas are used to collect drippage and overflow product sampling fluids in 30-gallon steel drums (Photo 2). The waste is accumulated until the drums are full and/or within 90 days of generation

	as per current company policy. Then the waste is poured into one of the Wastewater Treatment System sumps which pump it with other wastewater to the oil water separator Tank #59.
Date of Startup:	Before 1964.
Date of Closure:	These units are currently active.
Wastes Managed:	Various liquid petroleum based products.
Release Controls:	The drums rests on 3-foot by 3-foot circular metal pallets on cement flooring. These units are located outdoors.
History of Release:	No releases have been documented at these units.
Observations:	The concrete flooring has minor cracking. The barrels observed appeared to be in sound condition and were covered with lids. No evidence of release was noted.
SWMU 3	**Cooling Tower Units**
Unit Description:	These 300-foot by 100-foot units are used to cool heated process water. They are located near the north property boundary in the Refinery Process Area. Water is allowed to fall 100 feet into a basin. This cools the heated water. Sometimes this water has particulate matter that falls and settles within the cooling tower basin. The sludge material that collects in the basin is currently power-washed into drains that lead into the Wastewater Treatment System (SWMU 19). Before 1988 the towers had to be shut down to remove sludge. The sludge was pumped into tanker trucks and sent to a landfill for disposal.
Date of Startup:	Before 1964.
Date of Closure:	These units are currently active.

Wastes Managed:	Cooling tower sludge, wastewater.
Release Controls:	These units are located outdoors. The cooling tower basins have a single unit concrete floor and berm. The berm is 1-foot high and 6-inches wide. These units have several wastewater drains.
History of Release:	No releases have been documented at these units.
Observations:	Two operating cooling towers were observed. Both seemed to be in sound condition. No evidence of release is noted.
SWMU 4	**Bundle Cleaning Pad**
Unit Description:	This 25-foot by 50-foot unit is used during heat exchanger bundle cleaning (Photo 3). Heat exchangers are a series of bundled metal tubes that have water flowing through them. Half of these tubes have heated water in them and half have cool water in them. The hot tubes warm the cool tubes so that certain refinery processes could recycle the heat displaced in the water. Sometimes dirt, debris and sludge clog the tubes. When this occurs, the refinery disassembles the heat exchanger and place the tubes on the Bundle Cleaning Pad. Then the sludge in the tubes is drilled or power-sprayed out. The sludge and wastewater are drained into a trench beneath the pad. This trench leads into the Wastewater Treatment System (SWMU 19). This unit is located in the Refinery Process Area, south of the cooling tower units.
Date of Startup:	Mid-1970s.
Date of Closure:	This unit is currently active.
Wastes Managed:	Heat exchanger bundle cleaning sludge/K050, wastewater.
Release Controls:	The unit has a concrete pad. The pad is pitched toward a wastewater sewer. The unit is bermed on three sides. The berm is 4 inches high and 3 inches wide.

History of Release:	No releases have been documented at this unit.
Observations:	The unit was observed to be in sound condition. One side of the concrete pad has no berm. Although this pad is pitched toward the wastewater sewer, a release of wastewater may have occurred along the side of the pad with no berm.
SWMU 5	**Former Satellite Accumulation Area**
Unit Description:	This former 10-foot by 40-foot unit was used for the accumulation and storage of hazardous tank bottom waste from Crude Tank #46 (Photo 4). Crude #46 Tank held leaded gasoline product. Clark no longer produces leaded gasoline. The waste was shoveled and pumped into a plastic lined roll-off box. This former unit was located in the Southwest Crude Tank Field.
Date of Startup:	1981.
Date of Closure:	This unit is inactive. The tank was moved to SWMU 6 in 1981. The waste was stored in both SWMU areas combined for greater than 90 days. Clark claims that both of these units do not need closure since IEPA was tardy in approving a disposal permit for the waste. EPA has not made a decision on this issue.
Wastes Managed:	Leaded tank bottoms/K052.
Release Controls:	This former unit was outdoors. The unit has a earthen floor. A dike surrounds Tank #46 and the former unit area. The gravel covered earthen dike is 5 feet high and has a secondary containment capacity of 75,200 barrels (Clark, 1990).
History of Release:	No releases have been documented at this unit.
Observations:	No evidence of this unit currently exists. Crude Tank #46 no longer stores leaded gasoline.

SWMU 6	**Former Storage Area**
Unit Description:	This former 10-foot by 40-foot unit was used for the storage of hazardous tank bottom waste from Crude Tank #46 (SWMU 5) (Photo 5). This former unit was located within the diked area of Crude Tank #801 in the Northwest Crude Tank Field.
Date of Startup:	1981.
Date of Closure:	This unit is inactive. The tank was removed in 1981. The waste was stored in both SWMU 5 and 6 combined for greater than 90 days. Clark claims that both of these units do not need closure since IEPA was tardy in approving a disposal permit for the waste. EPA has not made a decision on this issue.
Wastes Managed:	Leaded tank bottoms/K052.
Release Controls:	This former unit was outdoors. The unit has a earthen floor. A dike surrounds Tank #801 and the former unit area. The gravel covered earthen dike is 5 feet high and has a secondary containment capacity of 115,000 barrels (Clark, 1990).
History of Release:	No releases have been documented at this unit.
Observations:	No evidence of this unit currently exists.
SWMU 7	**Satellite Accumulation Area**
Unit Description:	This 3-foot by 3-foot area is used to accumulate and store waste sulfur in 55-gallon steel drums. This waste is generated from cleaning the sulfur pits and vessels associated with the desulfurization process (Photo 6). When a sulfur pit or vessel is shut down for cleaning or maintenance, the molten sulfur is pumped directly into tanker trucks and sold as product. The unpumpable sulfur is allowed to cool. Jackhammers are used to crack the hardened sulfur. The sulfur rock is removed and placed into

55-gallon steel drums. This waste is then shipped off-site by flatbed truck to a landfill for disposal.

Date of Startup: 1976.

Date of Closure: This unit is currently inactive. It is only active when the sulfur pits or vessels are being cleaned or serviced.

Wastes Managed: Sulfur scrap.

Release Controls: This unit is outdoors. The unit sits on gravel covered soil. No secondary containment exists.

History of Release: No releases have been documented at this unit.

Observations: The unit looked sound. Powdered sulfur product on the graveled covered soil was noted in two areas near the unit.

SWMU 8 **Storage Treatment Tanks**

Unit Description: This unit consists of 6 gravel-covered earthen diked fields with six 5,100-barrel tanks (Photos 7 and 8). These tanks, #61 through #66, are part of the Wastewater Treatment Plant (SWMU 19). All skimmed oil and oily sludges are pumped to the #60s tanks from the API separators, Tank #59 and the DAF unit for further treatment and/or storage. Tank #66 is a Sludge Tank (Clark, 1990). Tanks #63 and #65 (SWMU 8) are oil water separator tanks. Since each type of oil has a different specific gravity many different layers of oil are formed. Solids settle at the bottom with water lying directly above. The oils are piped back to the Refinery Process Area for reuse. The water is sent back to the overflow pit and the cycle restarts. The sludge is pumped to Tank #66. All Wastewater Treatment sludges are RCRA listed wastes because of possible high levels of chromium and lead constituents. These sludges are removed off-site within 90 days of generation and used for fuel blending.

Date of Startup:	1968.
Date of Closure:	These units are currently active.
Wastes Managed:	DAF float/K048, API separator sludge/K051, Slop oil emulsion solids/K049, waste oil, wastewater.
Release Controls:	These units are outdoors. The units have a earthen floor. A dike surrounds each #60s Tank. Each gravel-covered earthen dike is 5 feet high and has a secondary containment capacity of 37,500 barrels (Clark, 1990).
History of Release:	No releases have been documented for this unit.
Observations:	The treatment tanks appeared to be in sound condition. The soil was stained extensively at the pipeline connection from Tank #66 on the outside of the west dike. This connection is used to vacuum pump sludge from Tank #66 into tanker trucks. A 20-gallon sampling dip pan was sighted on the ground next to this connection filled with what appeared to be oily sludge. Empty sample cans were also observed.
SWMU 9	**Former Container Storage Treatment Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application a map was provided showing that this unit was a container storage treatment area. (Photo 9) (Clark, 1980b). Facility representatives claim that this unit never existed. The unit is of unknown size.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.

Release Controls:	Unknown.
History of Release:	No releases have been documented at this former unit.
Observations:	No evidence of this unit exists. This unit is currently a gravel covered soil area.
SWMU 10	**Former Container Storage Treatment Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application a map was provided showing that this unit was a container storage treatment area (Clark, 1980b). Facility representatives claim that this unit never existed. The former unit is of unknown size.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this unit.
Observations:	No evidence of the former storage area exists. The unit is located in the current vicinity of the southern edge of Tank #52's diked area.
SWMU 11	**Former Container Storage Treatment Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application a map was provided showing that this unit was a container storage treatment area (Clark, 1980b). Facility representatives claim that this unit never existed. The former unit is of unknown size.

Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this unit.
Observations:	No evidence of this former storage area exists. This unit is located in the current vicinity of the northeastern corner of BTL Industries' Chemical Plant. RAI was unable to view this area since it was on BTL Industries property.
SWMU 12	**Former Storage Treatment Tank**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application, a map was provided showing that this unit was a storage treatment tank (Clark, 1980b). Facility representatives claim that this unit never existed. The former unit is of unknown size.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this unit.

Observations:	No evidence of the treatment tank exists. The approximate location of this former unit houses Tank #76, a 15,500-barrel gas blend tank in sound condition (Photo 10).
SWMU 13	**Former Drum and Waste Storage Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application, a map was provided showing that this unit was a drum and waste storage area (Photo 11) (Clark, 1980b). Facility representatives claim that this unit never existed. The unit is of unknown size.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this unit.
Observations:	No evidence of the former storage area exists. The approximate location of this former unit is in the northwest corner of BTL Industries' property. Currently, an empty gravel-covered soil area was observed through the fence between Clark Corporation's Blue Island Terminal and the BTL facility.
SWMU 14	**Former Container Storage Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application, a map was provided showing that this unit was a container storage area (Photo 12) (Clark, 1980b). Facility representatives claim that this unit never existed. The unit is of unknown size.

Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this former unit.
Observations:	No evidence of the former storage area exists. The approximate location of this former unit is under the control of Clark Blue Island Terminal.

SWMU 15 **Former Container Storage Area**

Unit Description:	In Clark's Hazardous Waste Part A Permit Application, a map was provided showing that this unit was a container storage area (Photo 13) (Clark, 1980b). Facility representatives claim that this unit never existed. The unit is of unknown size.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this former unit.
Observations:	No evidence of this former storage area exists. The approximate location of this unit is at the northern property boundary of Clark Corporation's Blue Island Terminal. Currently, the location of the former storage area

houses former electrical connections for a former flare unit. This flare unit was moved into BTL Industries property when Clark sold the property.

SWMU 16 **Former Waste Pile Area**

Unit Description: In Clark's Hazardous Waste Part A Permit Application a map was provided showing that this unit was a past waste pile area (Photo 13) (Clark, 1980b). Facility representatives claim that this unit never existed. The unit is of unknown size.

Date of Startup: Unknown.

Date of Closure: This unit is currently inactive. The date that use was discontinued is unknown.

Wastes Managed: Unknown.

Release Controls: Unknown.

History of Release: No releases have been documented at this unit.

Observations: No evidence of the former storage areas exists. The approximate location of this former unit is at the northwestern corner of Clark Corporation's Blue Island Terminal property. Currently, the location of the former storage areas houses electrical connections for a former flare unit. This flare unit was moved into BTL Industries property when Clark sold the property.

SWMU 17 **Former Waste Piles and Impoundment Area**

Unit Description: In Clark's Hazardous Waste Part A Permit Application a map was provided showing that this unit was a past waste pile and impoundment area (Photo 14) (Clark, 1980b). Facility representatives claim that this unit was never an impoundment. The representative did state that the

	unit was once used for construction waste piling. The size of the unit is approximately 3 acres.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The date that use was discontinued is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this unit.
Observations:	The approximate location of this former storage area is an empty field at the northern portion of land behind the Northwest Crude Tank Field. Some evidence of construction debris exists. There is no vegetation on this unit, although the area around this unit resembles a touch of prairie.
SWMU 18	**Former Impoundment Area**
Unit Description:	In Clark's Hazardous Waste Part A Permit Application, a map was provided showing that this unit was a past impoundment area (Photo 15) (Clark, 1980b). Facility representatives claim that this unit was never an impoundment.
Date of Startup:	Unknown.
Date of Closure:	This unit is currently inactive. The begin date of inactivity is unknown.
Wastes Managed:	Unknown.
Release Controls:	Unknown.
History of Release:	No releases have been documented at this former unit.

Observations: No evidence of this former unit exists. The approximate location of this former unit is at the northwestern corner of Tank #805's diked area in the Northwest Crude Tank Field.

SWMU 19 **Wastewater Treatment System**

Unit Description: Most of the wastes generated at the Clark facility are produced from the Wastewater Treatment System. All of the refining processes release wastewater. This wastewater enters the Wastewater Treatment System through dozens of drains (Photo 16). These steel drains lead to a vast pipeline system connected throughout the whole facility. Eleven electric sump pumps pump the wastewater to the Wastewater Treatment Area in the Southwest Crude Tank Field (Photo 17) (Clark, 1990). Some of this wastewater is treated in an alkylation neutralization pit before being pumped to the Wastewater Treatment Area (Photo 18). This pit is concrete lined. After it reaches the Wastewater Treatment Area, it is pumped into the above ground steel 5,100-barrel Tank #59 (Photo 19). If the volume of wastewater is greater than the volume that Tank #59 can hold, the wastewater overflows into a 72,000-gallon pit (Photo 20) (Clark, 1991d). This pit is made of concrete and is pitched to one side. As the wastewater settles in Tank #59, the oil floats to the top. The oil is pumped to one of two in-ground API oil water separators. The oil wastewater is settled allowing for oil to float on top and the sludge to collect on the bottom. The oil is then pumped to the #60s Storage Treatment Tanks (SWMU 8) for further processing. The water from both Tank #59 and the API oil water separator (Photos 21 and 22) are pumped into the DAF unit (Photo 23) which saturates the wastewater with air bubbles causing the oil to float to the top of the unit. The oil is skimmed off and pumped back to #60s Storage Treatment Tanks (SWMU 8). The water is drained into the Metropolitan Water Reclamation District Sewer System. A discharge flow meter exists at this point (Photo 24). The sludge (K051) material is vacuum pumped to Tank #66 (SWMU 8). Overflow pit sludge bottoms are also vacuum pumped to Tank #66. Tank #66 is a 5,100-barrel Sludge Tank (Clark, 1990). Tanks #63 and #65 (SWMU 8) are oil water separator tanks that operate

like Tank #59. Since each type of oil has a different specific gravity, many different layers of oil are formed. Solids settle at the bottom with water lying directly above. The oils are piped back to the Refinery Process Area for reuse. The water is sent back to the overflow pit. The sludge went to Tank #66. All Wastewater Treatment sludges are RCRA listed wastes because of possible high levels of chromium and lead constituents. These sludges are removed off-site and used for fuel blending.

Date of Startup: 1968.

Date of Closure: This unit is currently active.

Wastes Managed: DAF float/K048, API separator sludge/K051, Slop oil emulsion solids/K049, waste oil, wastewater.

Release Controls: The electric sumps are concrete walled. Tank #59 has a earthen floor. A dike surrounds it and Asphalt Tank #51. The dike is a gravel covered earthen 5-foot high dike with a secondary containment capacity of 85,000 barrels (Clark, 1990). The overflow pit, DAF unit, and the API separator pits are all concrete walled.

History of Release: No releases have been documented at this unit.

Observations: All tanks appeared sound and no signs of release were noted.

SWMU 20 **Asbestos Satellite Accumulation Areas**

Unit Description: These 10-foot by 40-foot areas accumulate and store asbestos waste from insulation removal processes. The material is wrapped in plastic before placement in a roll-off box. These units are site specific. When the abatement process is finished the unit will be permanently removed.

Date of Startup: 1978.

Date of Closure:	These units are currently inactive. This waste stream only occurs when insulation replacement is performed.
Wastes Managed:	Asbestos.
Release Controls:	The asbestos is plastic wrapped. The roll-off box is made of steel and is kept sealed when waste is not being added to it.
History of Release:	No releases have been documented from these inactive units.
Observations:	No evidence of these inactive units currently exists.
SWMU 21	**Spent Catalyst Satellite Accumulation Areas**
Unit Description:	These 3-foot by 3-foot areas accumulate and store spent catalyst fines in 55-gallon steel drums in various locations throughout the gasoline product process. These catalysts fines are sent off-site for reprocessing.
Date of Startup:	Before 1964.
Date of Closure:	This units are currently active.
Wastes Managed:	Spent catalyst fines.
Release Controls:	The units are situated on gravel-covered soil or cement pavement.
History of Release:	No releases have been documented at these units.
Observations:	One 55-gallon steel drum was observed in sound condition. No evidence of release were observed.

SWMU 22	**Water Treatment Plant for Boilers**
Unit Description:	This unit consists of a water treatment system, a boiler, and a cooling tower. The cooling tower unit is 300-foot by 100-foot and is used to cool heated boiler water (Photo 25). All three of these units are located near the north property boundary in the Refinery Process Area. Calumet Sag Channel water is pumped into the unit. This water is treated with water softeners. The water is used as once-through cooling waters. The water is then pumped into the cooling tower unit. Cooling tower basin sludge is generated from this process. This sludge is pumped into a Wastewater Treatment System (SWMU 19) sewer. The once-through cooling water is pumped into the Metropolitan Water Reclamation District Sewer System.
Date of Startup:	Before 1964.
Date of Closure:	These units are currently active.
Wastes Managed:	Cooling tower sludge, wastewater.
Release Controls:	These units are located outdoors. The cooling tower basin has a single unit concrete floor and berm. The berm is 1-foot high and 6-inches wide. These units have several wastewater drains.
History of Release:	No releases have been documented at these units.
Observations:	All units seemed to be in sound condition. The berm and cooling tower exterior wall showed signs of sludge splattering. Also noted was a unknown chemical deposit on the ground next to this cooling tower. The facility representative indicated that the deposit is caustic connected to the cooling tower process, although it lies beneath a sulfuric acid product tank.

4.0 AREAS OF CONCERN

RAI identified 2 AOCs during the PA/VSI. These are discussed below.

AOC 1 **Asphalt Tank**

During the VSI, ponding of an oily substance was observed at the base of Tank #51 (Photo 26). This unit is a 80,600-barrel asphalt product tank located in the Southwest Crude Tank Field. The Calumet Sag Channel forms Clark's southern boundary for this tank field. This unit has an earthen floor. A 5-foot gravel-covered earthen dike with a secondary containment capacity of 85,000 barrels surrounds this unit and Wastewater Storage Treatment Tank #59. This area is an AOC because contamination of soil was observed and no sampling or remediation has been conducted.

AOC 2 **Underground Fuel Product Storage Tanks**

This unit consists of two 4,000-gallon underground metal bulk storage tanks (UST) for dispensing regular (leaded) and unleaded gasoline to company vehicles (Clark, 1990). These USTs are located in the Southwest Crude Tank Field. According to facility representatives, these USTs were installed in the early 1970s. Since the USTs are approximately 20 years old and there is no secondary containment, leakage of the product may be occurring. This area is an AOC because the aged USTs may be releasing gasoline product to the soil.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 22 SWMUs and 2 AOCs at the Clark facility. Background information on the facility's location, operations, waste generating processes, release history, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information (such as the unit's description, dates of operation, wastes managed, release controls, release history, and observed condition) is discussed in Section 3.0. The AOCs are discussed in Section 4.0. Following are RAI's conclusions and recommendations for each SWMU and AOCs. Table 3 identifies the SWMUs and AOCs at the Clark facility and suggested further actions.

SWMU 1 **Outdoor Drum Storage Area**

Conclusions: This outdoor unit stores hazardous and special waste, as well as asphalt product in steel 55-gallon drums. The waste is stored for less than 90 days per current company policy. Three drums of TCA (F001) and 1 drum of PCB-contaminated oil (special) were observed in sound condition on a plastic pallet. Some stains were noted on the concrete floor. The threat of release via various pathway is summarized below.

Ground Water: Low. The barrels of waste are situated on a plastic pallet on cement pavement. A release can be contained before it has the opportunity to enter the ground water.

Surface Water: Low. A release can be contained before it has the opportunity to reach the nearest surface water (1/2 mile south).

Air: Low. Although TCA is a volatile chemical, the spent TCA is sealed in sound 55-gallon steel drums on a plastic pallet located on cement pavement. Thus the potential threat of release is low.

On-Site Soil: Low. The barrels of waste are situated on a plastic pallet on cement pavement. A release can be contained before it has the opportunity to enter the on-site soil.

Recommendations: No further action is recommended at this time.

TABLE 3

SWMU AND AOC SUMMARY

SWMU	Operational Dates	Evidence of Release	Recommended Further Action
1. Outdoor Drum Storage Area	1990 to present	Concrete Floor Stained	No further action at this time.
2. Sampled Product Waste Accumulation Storage Area	Before 1964 to present	None	No further action at this time.
3. Cooling Tower Units	Before 1964 to present	None	No further action at this time.
4. Bundle Cleaning Pad Storage Tank Area	Mid 1970s to Present	None	No further action at this time.
5. Former Satellite Accumulation Storage Area	1981	None	No further action at this time.
6. Former Satellite Storage Area	1981	None	No further action at this time.
7. Satellite Accumulation Storage Area	1976 to present	Powdered sulfur found on on-site soil	No further action at this time.
8. Storage Treatment Tanks	1968 to present	Soil Staining	Soil should be sampled for petroleum product contamination.
9. Former Container Storage Treatment Area	Unknown	Unknown	No action at this time, pending further information.
10. Former Container Storage Treatment Area	Unknown	Unknown	No action at this time, pending further information.
11. Former Container Storage Treatment Area	Unknown	Unknown	No action at this time, pending further information.
12. Former Storage Treatment Tank	Unknown	Unknown	No action at this time, pending further information.

TABLE 3 (continued)

SWMU AND AOC SUMMARY

SWMU	Operational Dates	Evidence of Release	Recommended Further Action
13. Former Drum and Waste Storage Area	Unknown	Unknown	No action at this time, pending further information.
14. Former Container Storage Area	Unknown	Unknown	No action at this time, pending further information.
15. Former Container Storage Area	Unknown	Unknown	No action at this time, pending further information.
16. Former Waste Pile Area	Unknown	Unknown	No action at this time, pending further information.
17. Former Waste Pile and Impoundment Area	Unknown	Unknown	No action at this time, pending further information.
18. Former Impoundment Area	Unknown	Unknown	No action at this time, pending further information.
19. Wastewater Treatment Plant	1968	None	Soil and ground water should be tested for petroleum contamination.
20. Asbestos Satellite Accumulation Storage Areas	1978	None	No further action at this time.
21. Spent Catalyst Satellite Accumulation Storage Areas	Before 1964	None	No further action at this time.
22. Water Treatment Plant for Boilers	Before 1964	Sludge splattering, unknown deposit on ground exterior to cooling tower basin	Deposit should be tested for caustic contamination

TABLE 3 (continued)

SWMU AND AOC SUMMARY

AOC	Operational Dates	Evidence of Release	Recommended Further Action
1. Asphalt Tank	About 1970	Oil contaminated soil	The soil and ground water should be sampled for petroleum contamination
2. Fuel Product Under-Storage Tanks	About 1970	Possible fuel leakage	The soil and ground water should be sampled for petroleum contamination. The USTs should be tested for integrity.

SWMU 2 **Sampled Product Waste Accumulation Areas**

Conclusions: These outdoor units are used to collect drippage and overflow product sampling fluids in 35-gallon steel drums. The waste is stored for less than 90 days per current company policy. The drums are situated on circular metal pallets on cement flooring. The threat of release via various pathways is summarized below.

Ground Water: Low. The waste is in sound 35-gallon steel lidded drums on metal pallets situated on cement pavement. A release can be contained before it has the opportunity to enter the ground water.

Surface Water: Low. A release can be contained before it has the opportunity to reach the nearest surface water (1/2 mile south).

Air: Low. Although some of the petroleum product sample waste may be volatile, the drums are lidded. Thus, the potential release to air is low.

On-Site Soil: Low. Some very minor cracking in the cement pavement was noted. The waste itself is stored and accumulated in sound 35-gallon steel drums on metal pallets. The drums are lidded. Any release can be contained before it has the opportunity to enter the soil.

Recommendations: No further action is recommended at this time.

SWMU 3 **Cooling Tower Units**

Conclusions: These units cool heated process water. Nonhazardous sludge is generated. Before 1988 it was removed and disposed at a landfill. Currently it is power-washed into the wastewater sewer. The sludge collecting basins have a single unit concrete floor and berm. The units appeared to be in sound operating condition. The threat of release via various pathways is summarized below.

Ground Water: Low. The units have adequate secondary containment via the foot high berms and wastewater drains. A release can be contained before it has the opportunity to enter the ground water.

Surface Water: Low. A release can be contained before it has the opportunity to reach the surface water (3/4 miles south).

Air: Low. The non-volatile nature of the waste in this unit does not pose a threat of release to air.

On-Site Soil: Low. Any release can be contained via the foot high berms and wastewater sewers, before it has the opportunity to enter the soil.

Recommendations: No further action is recommended at this time.

SWMU 4 **Bundle Cleaning Pad**

Conclusions: This outdoor unit manages the cleaning of heat exchange bundles. The resulting sludge waste is K050 and RCRA listed for chromium and lead constituents. The concrete pad is pitched shallowly to a trench which leads to a wastewater chain. Both the sludge and wastewater are power-washed into the sewer. The pad is bermed on three sides. The threat of release via various pathways is summarized below.

Ground Water: Low. This unit is a concrete slab which is pitched toward a wastewater sewer and trench. Although the unit is only bermed on three sides. A release can be contained before it has the opportunity to enter the ground water, since the concrete slab is pitched away from the unbermed side.

Surface Water: Low. Any release can be contained before it has the opportunity to reach the nearest surface water (3/4 mile south).

Air: Low. The non-volatile nature of the waste in this unit does not pose a threat of release to air.

On-Site Soil: Low. Although the unit is only bermed on three sides the concrete pad is pitched toward a wastewater trench and wastewater sewer. Thus a release can be contained before it has the opportunity to enter the ground water.

Recommendations: No further action is recommended at this time.

SWMU 5 **Former Satellite Accumulation Area**

Conclusions: This unit was used for the accumulation and storage of hazardous leaded tank bottoms (K052) waste from Crude Tank #46. The waste was stored in a plastic lined roll-off box on an earthen floor within a diked area. The unit was moved to the dike area surrounding Crude Tank #801. The unit has not been formally closed. The threat of release via various pathways is summarized below.

Ground water: Low. The waste was stored in a plastic lined roll-off box on an earthen floor within a diked area. A release could have been contained before it had the opportunity to enter the ground water. Currently, the unit is empty and inactive; thus no threat exists.

Surface water: Low. A release could have been contained before it had the opportunity to reach the nearest surface water (1/4 mile north). Currently, no threat exists since the unit is inactive.

Air: Low. Due to the inert nature of the waste, the potential of release would have been low. Currently, no threat exists since the unit is inactive.

On-site soil: Low. Due to the inert nature of the waste, the potential of release would have been low. Currently, no threat exists since the unit is inactive.

Recommendations: No further action is recommended at this time.

SWMU 6 **Former Storage Area**

Conclusions: This unit was used for the storage of hazardous leaded tank bottoms (K052) waste from the Crude Tank #46. The waste was stored in a plastic lined roll-off box on an earthen floor within a diked area surrounding Crude Tank #801. The waste was removed in 1981. The unit has not formally been closed. The threat of release via various pathways is summarized below.

Ground water: Low. The waste was stored in a plastic-lined roll-off box on an earthen floor within a diked area. A release could have been contained before it had the opportunity to enter the ground water. Currently, the unit is empty and inactive; thus no threat exists.

Surface water: Low. A release could have been contained before it had the opportunity to reach the nearest surface water (1/2 mile south). Currently, no threat exists since the unit is inactive.

Air: Low. Due to the inert nature of the waste, the potential of release would have been low. Currently, no threat exists since the unit is inactive.

On-site soil: Low. Due to the inert nature of the waste, the potential of release would have been low. Currently, no threat exists since the unit is inactive.

Recommendations: No further action is recommended at this time.

SWMU 7 **Satellite Accumulation Area**

Conclusions: This unit accumulates and stores waste sulfur in 55-gallon steel drums. It is generated from cleaning sulfur pits and vessels associated with the desulfurization process. This unit is currently inactive. It is only activated when the sulfur pits or vessels are being cleaned or service. This unit is situated on gravel-covered soil. The unit appeared to be in sound condition. The threat of release via various pathways is summarized below.

Ground water: Low. Since the scrap sulfur is a solid and in an inert form, it poses no threat to the ground water.

Surface water: Low. Since the scrap sulfur is a solid and in an inert form, it poses no threat to the surface water.

Air: Low. Since the scrap sulfur is an inert form, it poses no threat to the air.
On-site soil: Low. Since the scrap sulfur is an inert form, it poses no threat to the on-site soil.

Recommendations: No further action is recommended at this time.

SWMU 8 **Storage Treatment Tanks**

Conclusions: This unit consists of 6 wastewater treatment storage tanks. Tanks #63 and #65 are oil water separator units. Tank #66 is a sludge storage tank which manages DAF float (K048), API separator sludge (K051), and slop oil emulsion solids (K049). These wastes are RCRA listed since all of them have a potential for high levels of chromium and lead. These six tanks are in sound condition. Each has an earthen floor and a 5-foot high earthen dike. The pipeline connection from Sludge Tank #66 to tanker trucks showed evidence of leakage onto the soil. Heavy soil staining was noted. A full sampling dip pan was also noted. These units were installed in the late 1960s. The threat of release via various pathways is summarized below.

Ground water: Moderate. Although the treatment tanks appear to be in sound condition, and have sound lateral secondary containment (earthen dikes), there is a moderate potential for ground water contamination. The floor of each diked area is earthen. Thus, the floor does not serve as secondary containment for vertical movement. If a release did occur, it would be prevented from spreading laterally but not necessarily vertically. Hence if the soil becomes saturated with large amounts of oil, it is moderately possible for the ground water also to be contaminated. The age of the tanks suggest that releases may have occurred in the past, although none have been documented.

Surface water: Low. A release can be contained by the earthen dikes before it has the opportunity to reach the nearest surface water (1/2 mile south).

Air: Low. The nature of the waste in this unit does not pose a threat of release to the air.

On-site soil: High. Due to the age of the tank field and the lack of adequate vertical secondary containment there is a high potential for release to on-site soil. On-site soil appears to be contaminated at the pipeline connection used for Tank #66 sludge removal.

Recommendations: RAI recommends that each tank field be sampled for petroleum product contamination in both the on-site soil and the underlying ground water. RAI also recommends that the soil near the pipeline connection be tested, and if a verification is made that the soil staining is a result of a petroleum release, remediate the area.

SWMU 9 **Former Container Storage Treatment Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location or history of release is known. Currently, the approximate location of the unit is an empty gravel-covered soil area near the Water Treatment System for Boilers (SWMU 22). The threat of release via various pathways is summarized below.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 10 **Former Container Storage Treatment Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the approximate location of this unit is in the vicinity of the southern edge of Tank #52's diked area. The threat of release via various pathways is summarized below.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 11 **Former Container Storage Treatment Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the approximate location of this unit is in the vicinity of the northeastern corner of BTL Industries' Chemical Plant.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about wastes managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 12 **Former Storage Treatment Tank**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Applications facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the approximate location of this unit houses Tank #76, a 15,500-barrel gas blend tank.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 13 **Former Drum and Waste Storage Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the approximate location of this unit is in the vicinity of the southern edge of Tank #52's diked area. The threat of release via various pathways is summarized below.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 14 **Former Container Storage Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the location of this unit is under Clark Corporation's Blue Island Terminal.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 15 **Former Container Storage Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the location of the former unit houses former electrical connections for

a former flare at the northern property boundary of Clark Corporation's Blue Island Terminal.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 16 **Former Waste Pile Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit never existed. No information about wastes managed, exact location, or history of release is known. Currently, the approximate location of the unit is at the northwestern corner of Clark Corporation's Blue Island Terminal property. This area currently houses former electrical connections for a former flare unit.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about wastes managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 17 **Former Waste Piles and Impoundment Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit was never an impoundment. The representatives did state that this area was once used for construction waste piling. Currently, this former unit is an empty field without vegetation. Some evidence of construction debris exists. The vegetation is thriving outside the scope of this unit. The threat of release via various pathways is summarized below.

Ground water: Unknown. No information about wastes managed, exact location, or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about wastes managed, exact location, or history of release is known.

On-site soil: Unknown. No information about wastes managed, exact location, or history of release is known.

Recommendations: RAI recommends no further action at this time. If additional information regarding exact location, constituents managed, or potential release becomes available, testing may be indicated.

SWMU 18 **Former Impoundment Area**

Conclusions: This unit was shown in Clark's Hazardous Waste Part A Permit Application's facility map. Facility representatives claim that this unit was never an impoundment. The representatives did state that this area was used for

construction waste piling Currently, the approximate location of this unit is at the northwestern corner of Tank #805's diked area in the Northwest Crude Tank Field.

Ground water: Unknown. No information about wastes managed, exact location or history of release is known.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Unknown. No information about waste managed, exact location, or history of release is known.

On-site soil: Unknown.

Recommendations: No further action is recommended at this time.

SWMU 19 **Wastewater Treatment System**

Conclusions: This system treats all wastewater at the facility. The system includes hundreds of drains; a split storm water/wastewater pipeline system; an overflow pit; Tank #59, a oil water separator; a DAF unit, and an alkylation neutralization pit. All units appeared to be in sound condition. All sub-units of the Wastewater Treatment System have sound secondary containment except for Tank #59. Tank #59 has no vertical secondary containment since the field floor is earthen. Thus, any release to the field would result in soil contamination. The tank was installed in the late 1960's. All units in this system are situated from 1 block to 3/4 mile north of the Calumet Sag Channel. The threat of release via various pathways is summarized below.

Ground water: Moderate. The vertical secondary containment of Tank #59 is inadequate. A release to the soil would have a moderate potential to leach into the ground water for this reason. Also due to the age of the tank, past releases might have occurred or are currently occurring. All other units have adequate

secondary containment that would contain a release before it had an opportunity to enter ground water.

Surface water: Low to Moderate. Most units within the Wastewater Treatment System have adequate secondary containment except for Tank #59. Releases from these units can be contained before it has the opportunity to reach surface water (1 block to 3/4 miles south). Tank #59 has inadequate vertical secondary containment. Future releases will pollute the soil and ground water. Since Tank #59 is within 1 block of the channel, it is moderately possible that surface water may be come contaminated.

Air: Moderate to High. Both API separator and the Overflow pit are exposed to air. Vapor inhalation may have harmful effects to health. The waste are volatile in nature. Therefore the potential threat to air is moderate to high.

On-site soil: Low to High. All units except Tank #59 have adequate secondary containment that could prevent a release from reaching on-site soil. Therefore the potential threat to on-site soil is low. However Tank #59 has inadequate secondary containment. The potential threat to on-site soil is high since soil contamination occurs instantly after a release.

Recommendations: RAI recommends soil and ground water sampling be performed around Tank #59 to determine if releases have occurred in the past or are presently occurring as a result of age of the tank and lack of secondary containment.

SWMU 20 **Asbestos Satellite Accumulation Areas**

Conclusions: These units accumulate and store asbestos waste in steel roll-off boxes at various locations throughout the facility during pipe insulation removal and replacement. These units are currently inactive. These units are only activated when pipeline insulation replacement process are instigated. The threat of release via various pathways is summarized below.

Ground water: Low. The nature of the waste in these units does not pose a threat of release to ground water.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Moderate. Asbestos fibers are carcinogenic. When asbestos insulation is removed, there is a moderate potential for release of fibers into the air. This waste is then plastic wrapped before placement into the roll-off box.

On-site soil: Low. The nature of the waste in these units does not pose a threat of release soil.

Recommendations: No further action is recommended at this time.

SWMU 21 **Spent Catalyst Satellite Accumulation Areas**

Conclusions: These units accumulate spent catalyst fines in 55-gallon steel drums at various locations throughout the facility. The units are situated on gravel-covered soil or cement pavement. The waste is removed within 90 days per current company policy. The threat of release via various pathways is summarized below.

Ground water: Low. The nature of the waste in these units does not pose a threat of release to ground water.

Surface water: Unknown. No information about wastes managed, exact location, or history of release is known.

Air: Low. Although these catalyst fines may be toxic by inhalation, the drums are sealed and are in sound condition. Hence the potential threat to air is low.

On-site soil: The nature of the waste in this unit does not pose a threat of release to ground water.

Recommendations: No further action is recommended at this time.

SWMU 22 **Water Treatment Plant for Boilers**

This unit treats channel water before and after its use as once-through cooling water for cooling the facility's boilers. These sub-unit consists of a water treatment system, a cooling tower, and a boiler. The units appeared to be in sound condition. Sludge splattering was noted on a cooling tower basin berm and exterior wall. Also noted was an unknown deposit on the ground next to this cooling tower. The facility representative indicated that it was lime, although it lie beneath a sulfuric acid product tank. The units have secondary containment in the form of berms.

Ground water: Low. The nature of the waste in this unit does not pose a threat to ground water since a release can be contained before it has the opportunity to enter the ground water.

Surface water: Low. A release can be contained before it has the opportunity to reach the nearest surface water (3/4 mile south).

Air: Low. The nature of this waste in this unit does not pose a threat to air.

Oil-site soil: Low. Any release can be contained before it has the opportunity to enter the soil. However, if deposit located next to cooling tower on ground is something other than lime, a potential release to on-site soil may occur.

Recommendations: Soil sampling is recommended to test deposit found on ground next to cooling unit.

AOC 1 **Asphalt Tank**

Conclusions: During the VSI an oily substance was observed at the base of Tank #51. This unit is a 80,600-barrel asphalt product tank. This unit has a earthen floor.

Recommendations: RAI recommends that soil and ground water sampling be performed for petroleum contamination.

AOC 2 **Underground Fuel Product Storage Tank**

Conclusions: This unit consists of two 4,000-gallon underground metal bulk storage tanks (UST) for dispensing regular (leaded) and unleaded gasoline to company vehicles. These UST were installed in the early 1970s. Since the USTs are approximately 20 years old and they have no secondary containment, leakage of the product may be occurring.

Recommendations: RAI recommends that soil and ground water be sampled for petroleum contamination and that the two tanks be tested for integrity.

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ATTACHMENT A

VISUAL SITE INSPECTION FIELD NOTES

CLARK

CLARK OIL & REFINING CORP.
(CLARK)

BLUE ISLAND TERMINAL
BLUE ISLAND REFINERY

THIS IS RUN AS SEPARATE ENTITY

BLUE ISLAND Terminal-CLARK OIL
DIFFERENT CLARK DIVISION Control
TERMINAL LOADING OUT OF ST. LOUIS

MAY BE NOT

STILL CLARK's Property
LOADING PROPANE? OFFICE

BTL - 1985

Residences
Some have been our by CLARK

SRT 9/21/91 (1)

½ MILE From Prop LINE Res
Residences

Metropolitan Water Reclamation
District Across CA SAG CHANNEL.
They ARE Supposed to build a
refinery there.

1945 Start up.
Great Lakes Refining Area operated
Refining Area and part of tankfield
grassy fields elsewhere.

Chem plant built in 1960s

Refinery no changes really with
operation

BTL-Chem 1960
Tank Farm 2 - 1970s

Stony or Mosquito Creek
North side of rail-track

West - FSC Paper Company
Recycle Newsprint

Century
Flower Shops

SRT 8/21/91 (2)

Heavy Industry to the West

Heavy Industry - then residential

CLARK - No wells
Forest Preserves ?

Deep tunnel Well Measuring Depth
Mt. Greenwood INTERCEPTOR TUNNEL Goes to
CALUMET Treatment Plant

Pulaski - Pumps

WIRETON CREEK

electrical substation
½ Edison ½ CLARK

UNINCORPORATED Cook County
ONLY portions are IN Alsip and Blue
ISLAND

Refinery -
gasoline
fuel oils 2, 6
asphalt
propane
LPG gas
butane
SULFUR - by product product fuel gas
desulfization

Crude unit.
Y = Sewer DRAIN on Process
two DRAINS - PARTIAL Segregated
a) oil Y
b) Storm H2O ⊕

Storm H2O Discharged to CAL SAG IN SOME CASES.

HVGO = Heavy Vacuum Gas Oil. So heavy Vacuum is Needed to have it Float.

Crude Oil - heaters, towers.

Light Vacuum gas oil
heavy oil gas oil
Bunker oil to FCC
gas oil to FCC
asphalt - product

Knock out Drums - water is dropped OFF gas line like a line dryer condensation

Desalter - Remove Salts that may Corrode Pipe ~~Water~~

Water/oil - Electric plates. Emulsion is broken up between H_2O and Oil

Oil waste water - not a high ph Material

FCC - fluid catalytic cracker

Fuel Gas is produced Burned in Own Heaters

C^3 C^4 Gas sent to ALKALINATION UNIT.

Product
- Gasoline
- Heavy Naphtha Stripped
- Light Cycle oil
- Heavy Cycle oil
- Certified Slurry oil

Waste
- Catalyst Fines - Sold as Product
- Equilibrium CATALYSTS

Fresh Feed = Gas oil from Crude Unit
- Amer Chem Company
- Sell to Paper Mills
- Sodium Hydroxide

Scrubbers FCC Scrubbed with Sodium Hydroxide

Steam drum knock out drums + Condensation
- Sour water stripper
- H_2S sent to treatment internally

Lean gas filter - gas to fuel gas system

Scrubbers are + Water wash

Enclosed system then sent to drain

Steel pipe for treatment / water lines

HF ALKALATion U...

Product

ALKALATE - Type of Gas...
Fuel GAS
LPG
Normal Butane
HydroFlouric Acid
Neutralized - Sodium HydroKide
Sewered

2 KnockOuts - CoLescers

ISOMAX Unit

Product

Napitha
IsoMate Gasoline
Fuel GAS - MAy be Sent to DesulFurization Process before Stored as product
Gas
Isomate
Waste
Flash Drum - VolAtile and they Vaporized. A Liquid is Formed and CAN Be Drained

SKT 8/21/91

UniFiners - Hydrotreating Naptha to Remove H_2S

3 UNITS

Base Same SetUp

Catalyst Regenerated within UNIT

Products

Fuel Gas (Used in Fuel Gas Charge)

Intermediate Plat Former Charge (Reformers)

Isomax Charge

Most Goes to Sour Hyd System

Stage Separator Can go to SW System or directly to sewer IF Problem EXISTS

ReFormers (PlatFormers)

Product

Platformate - Gasoline Prod

Hydrogen Charge to UniFiers

PlatFormers are Real Dry Units

Saturate Gas Plant

Intermediate Unit

Gas Creation

Fuel Gas

Isobuthane

Buthane

SKT 3/21/91

Steam Knockouts
LPG Scrubbers

DesulFurization Plant

Product
Treated Fuel Gas
Used For burning on Site
Liquid SulFur

Takes Fuel GAS
Scrubb out SulFur

Open Drain Tank ⇒ Residuals
Sump pump to oil waste water Drain
Reused IN Surge tank
Closed Drain TANK - ON SKIDS

Sour Water Stripper
Discharge
1) To Sewer
2) Most sent to Desalter and reused

(9) SRT 8/21/91

SRT 8/21/91

Boiler House
5 Boilers all together
H2O From River
Desalt it
Use at refinery
Treated Boiler Feed sent to various units for cooling

Tank - Surge Suppression Tank
Process Water Sewers From Refinery Underground to Tank 59

Originally They were near SulFur Plant

NY NPDES PERMIT
Creation for Storm water Discharge.

ABandoned Pipe - Direct to River Once Thru Cooling H2O Storm water	ABandoned before mid

Process oily water → 59
Storm water → 38 Sump (above ground)
When heavy rain 38 Sump may overfill it has a layer water then petroleum oil separated out water deposited in 6 Ft sewer line Sewer lines also observed tank farms
6" Sewer cut Fall Sump pump up to Tank 59
weir set up in case of heavy rain

(10)

6" Sewer overflow. Each dike drained separately.

API separators - bottom are K051

Oil floated from this piped to 60s tanks and recycled. Separators are in ground.

API Separator bottoms

20 yrs old?
hauler with truck
Vacuum trucks

Overflow pit (behind separator) - Tank 59
also overflow in it concrete pit.

K051 - bottoms
PC1 - East Chicago
EWR
Evans - Cottage Grove
Terre Haute

Transporters are Subcontractors

Sludge from API up to 1989

(11) SET 8/21/91

1989 upgrade separators
installed paddles and pumps

Sumps pump waste sludge into above ground tank number 66 sludge storage tank

60s - recyclers

Tank
63 and 63 collect oil

phase separators

Solids will fall to bottom of tank

Oil - recycled back to crude unit

Water - back to API overflow pit

Solids - pumped directly into truck
12,000 - 20,000 a month
3 trucks a month

K049 Waste

They have not been cleaned in 25 years

Oil type goes to overflow pit.
Sloped toward sump pump

Pit has sump pump which pumps into Tank 59

SET 8/21/91 (12)

Slop oil - vacuum transported to overflow pit

Sludge tanks sits on stilts
It is a separator tank. Oil float sent to 60s tank.

Sludges are then sent to 60s tank also for recycling

As particulates break down. The middle layer goes to overflow pit and then in tank 59

Water goes thru overflow with wier and then put into the sedifloater-unit which is a separator also. Oil is pumped back to the 60s tank.

Clean water discharge to Metro Sewer Systems.

Once every 2 years this tank bottoms is vacuumed pumped directly into truck.

actually twice in one year.

the float is knit - API Bottoms???

Part A did not understand what was it all about.

then sent to Tank 59

Sed. buildup within overflow pit is tanks or 55 gallon drums Once in 20 years. Unleaded tank bottoms. Oil could recovered shoveled out otherwise

Drum - AFGANAX - 80 Drum 199?
B Separate

Overpacks were used since DOT barrels did not originally meet standards

Once every 3 years plant is shut down for 2 or 3 weeks for maintenance etc.

Catalyst recovery - manifested under special waste regenerate it

Crin - Net Louisiana
↓
Isomax

the rest are sold. a few are regenerated

drier Catalyst
Aluminum Catalyst - land disposal
directly from unit vacuum - dumped and disposed of at Cid. Once every 2 or 3 years.

Sand used to clean up asphalt spill.

Sulfur, Sand, Soil

Pit used to hold sulfur independent Waste CID

Sulfur pits - maintenance

Very infrequently once every 3 yrs 20 yds.

Catalyst the same

Asphalt Spills means Tanks 52 + Tank 38 large volume. (waste)

SRT 5/21/91

Digging for sewer etc. get disposal of in same manner.

Oil dry. Well.

IF Benzene is too high then it has to be figured DIFFERENTLY

Tanks 11 and 12 owned, permitted and regulated by BTL
leased tanks

Spill within process unit
Sewer Caught
Asphalt
gas oil - Creek:

Stormwater runoff into Creek blocked OFF IN CWA.

1990 Tank 52 - Asphalt leakage onto Soil Scraped asphalt soil
Tank 38 - Overfield

1989 Tank 38 Asphalt/Soil 375 yds
Asphalt spill on soil from faulty pump seal

SRT 5/21/91

M-June 1991 Tank 38 - overflow
200 yds
Wheel Barrel feet or tac
OFF Soil/spill

Fire Training
ALSIP
Blue Island

Fire of FLANGE

Maintenance
A) Safety Kleen

B) 1,1,1 Trichloro Dip tank

- Second Containment
- Recycle By Safety Kleen
- Rags
- Rags reused when Dry

Electrical Instrument get
1,1,1 Trichloro First when Clear

SKT 8/21/91

3 55 gallon drums of waste

Dikes in June filled with Stormwater
Heated discharge water flowed into
Solidified into fuel oil gasoline. Fuel
oil dissolved into the flowed into Creek
Storm Sewer
Hazardous Storage area

Northwest Properties

Area #2 Construction Rubble
no Leaks
no Process

Browning-Ferris Chemical Plant
Non-Hazardous
Flatbed Truck Winthrop Harbor
40 Drums
Resins

Cooling Tower sludge no longer has
bottoms now goes through drier and
then fire water treatment System.

SKT 8/21/91

Once every 3 years. 9000 gallons
Vacuum pumped. 1985

liquidy Sludge, sent to CID until
Illinois said no liquids

90 Safety Kleen cleans out
Solvent

In past 1,1,1 TCA used all the time.
Oil in the bottom of drums is used.

170 Contamination for Chlorine ~~Contaminati~~
Alternative will take it

FOOL Must Be Less than 170

Mixed with Tanks 606

3 diptank

Spray Cleaners

approx 10 drums of waste a year.

SRT 8/21/91

Lube Oils - Some can be

Asbestos - Central Illinois landfill
removal pipeline

duble box, plastic
hopper - roll off box
"Crown"
Garbage and trash from
refinery

278 employees
3 Shifts
24 hours a day
24 hour security on site

Scrap Resin off Former Chemical
Total Title Transport

Clark Oil and Refinery Corporation
Blue Island Refinery
Oil + Water Separator
TSP's GENERATED/under tanks Trucks

The 200 tank field fed by underground
4½ MIL GAL 100 ft Diameter
50 ft high

SRT 8/21/91

Dike fields at Terminals Stormwater implies.

One of tanks contain gas oil (Vasiline) has to be heated to move

dike fields - valve.

Tank 804 had a leak of gas oil. Spillage. Sewer contaminated flowed into sewer. January Froze. Sewage was assumed closed soil was cleaned

Last 7 years no leaded gas on site

1981 - Leaded tank bottom cleaned. Samples Non hazardous but RCRA tested

Independent Waste Systems Gary In 8 yd 3

CID LANDFILL - CALUMET CITY
Chemical Waste Mgmt.

When was generated started?
When they close tanks

TANK 46 1 Million Gallon Tank

K052 Vapor Free
Cleaned for entry use
air blasting
Shoveled
Put in Lined (plastic) 15 yd roll off box
box is covered
dike field was not very large
Moved from 76 to 101
SAT to Permit Came In.

Catalyst - Each unit has one when it becomes used
Some used in process
Continuously regenerated
Sometimes sold to customers
Some are Land Disposed

Aluminum

Wastewater

Sump, Pump
Pump To API Seperator
oil skimmed off
OIL Recur
H_2O - Dissolved Air Floatation Unit
Then it goes to Metro Sanitary District
User Charge + Parameters as under CWA and their own test

TSS
BOD

H_2O Monitor Sometimes 2 weeks at a time by District

Wastewater Hazardous Constituents
API Separator Bottoms
Benzene

K052 - Leaded Tank bottoms

Crude oil brought in by Pipeline
1) Chicago - OFFShore Louisiana
2) West Shore Pipeline brings into plant
3) Arco pipeline

Clark owns that sends fuel to Hammond

Chicago pop's up in tank farm
Arco " " "

West Shore comes up in bottom left hand
Comes off our map.

Outside Pipeline = internal pipeline pumped into tank farm. Pipes go underground to refinery. Then they go to topping unit (1st).

Then it goes to three different processes
FCC unit gas
alkalination
hydracracker - fuel oil into

Asphalt - must be kept hot
have insulation on

Round tanks are Butane spheres.

5-Tank 59 3.0 ppm

16-7 51 oil ground

18 12.3
Flow rate 500gal/min each one

19- DAF Skimmer

20
Deep Tunnel lies under Cal Sag
Observation well for deep Terminals
to measure dept

Tank 46 Leaded Tank Bottoms

Railcare
City water meters

(25) SHT 8/21/91

terminal covers past waste areas
Tank 301 - ROLL OFF Tank
BTL Piles of debries
[redacted] was to once had resin drum
Storage

Warehouse pre-stress concrete
Catalyst outside 4x4x5 ft.
Sheet into containers and delivered
to Louisiana. Once every 3 years.
6.1 BTL
Sludge taken out of tank 65
sample int. 64

1,1,1 TCA used waste - Safety Kleen
PCB Waste - 5 gal
East
Parts Washer - Garage
30 gallon
electric pumped into barrels and
Stored at (1)
(1) Water trench in Stalls.
(1b) East

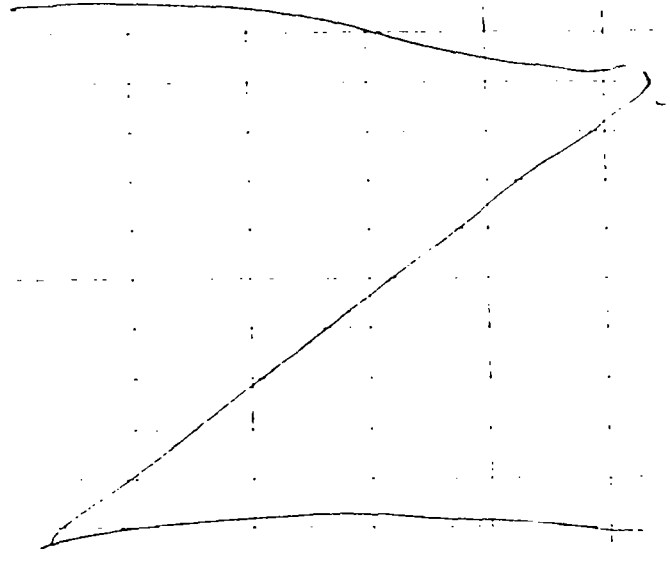
SHT 8/21/91

(2) Knock OFF
Heated Water

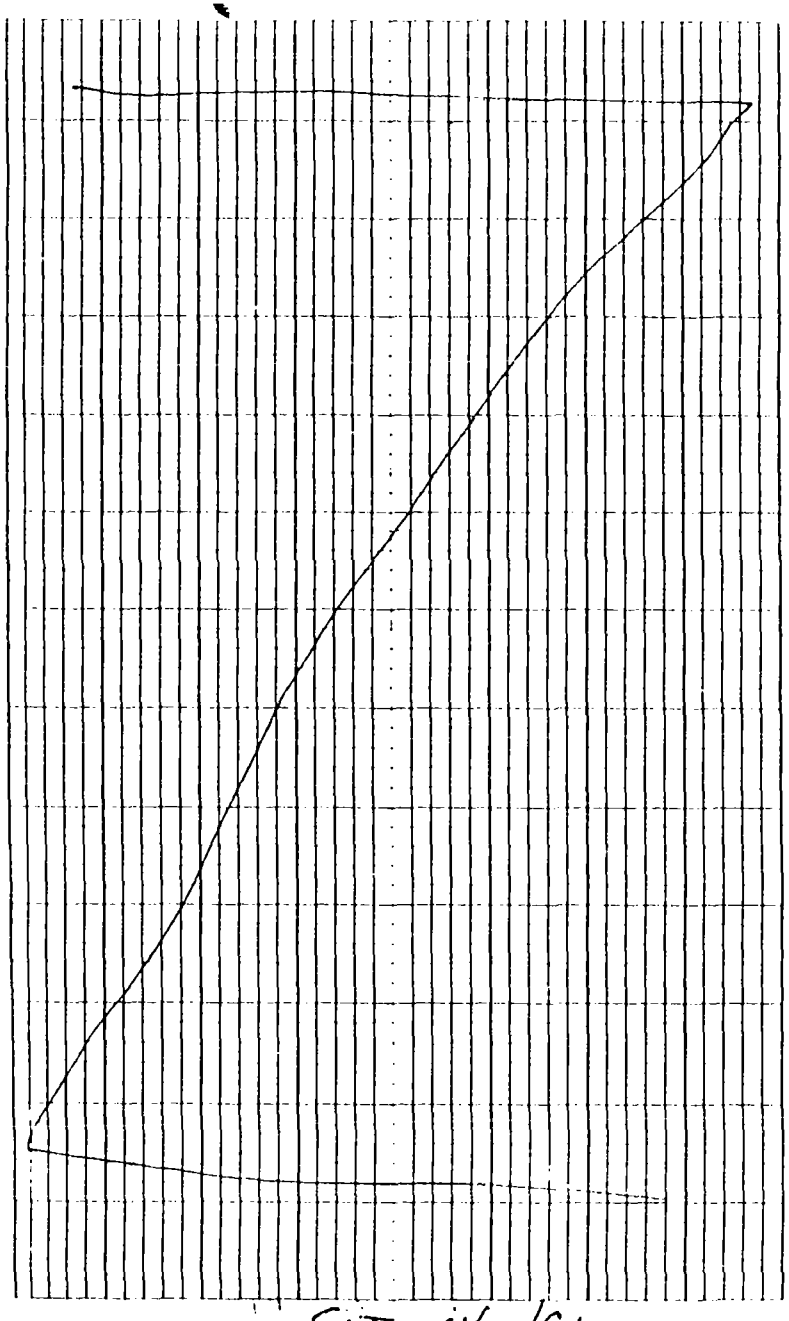
Process water

FCC Area 1.9 PPM

Hydro Flouric Acid Area 4.1



SMT 8/31/91



SMT 8/31/91

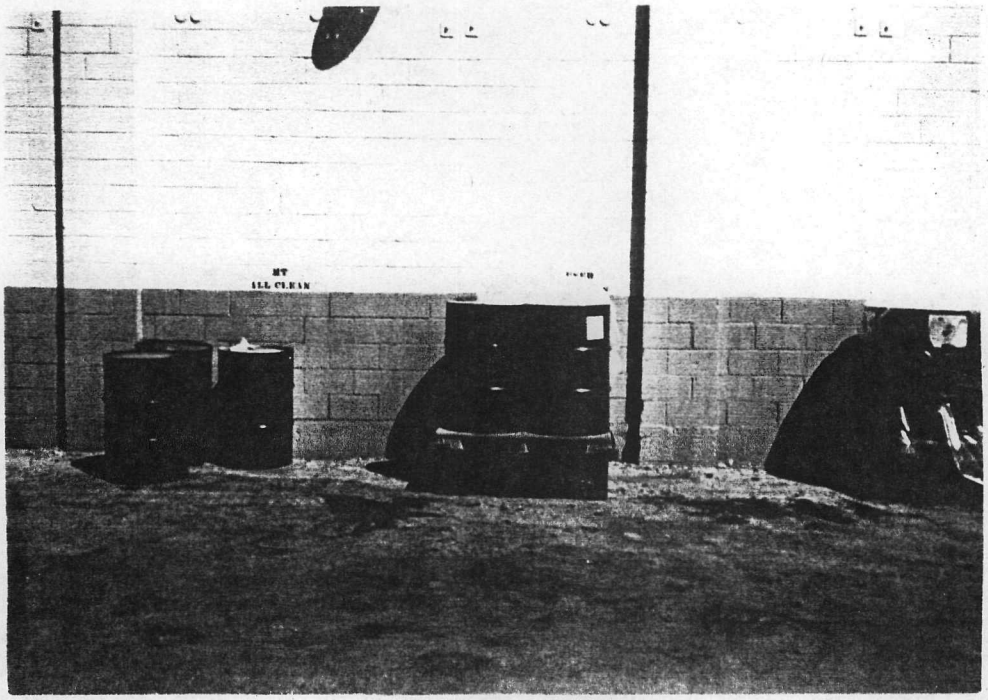
ATTACHMENT B

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

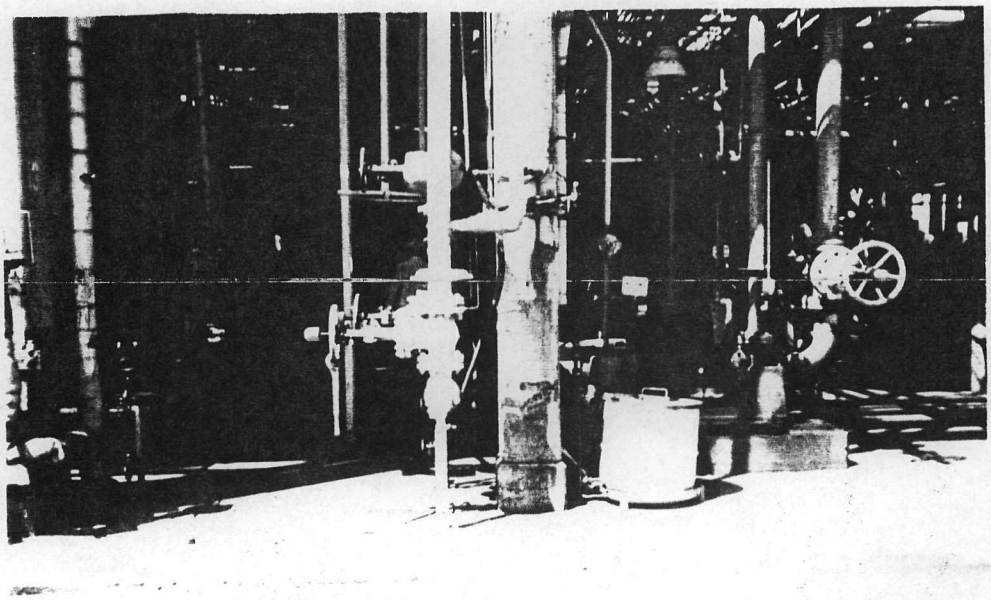
VISUAL SITE INSPECTION SUMMARY

Clark Oil & Refining Corporation (Clark)
131st & Kedzie Avenue
Blue Island, IL

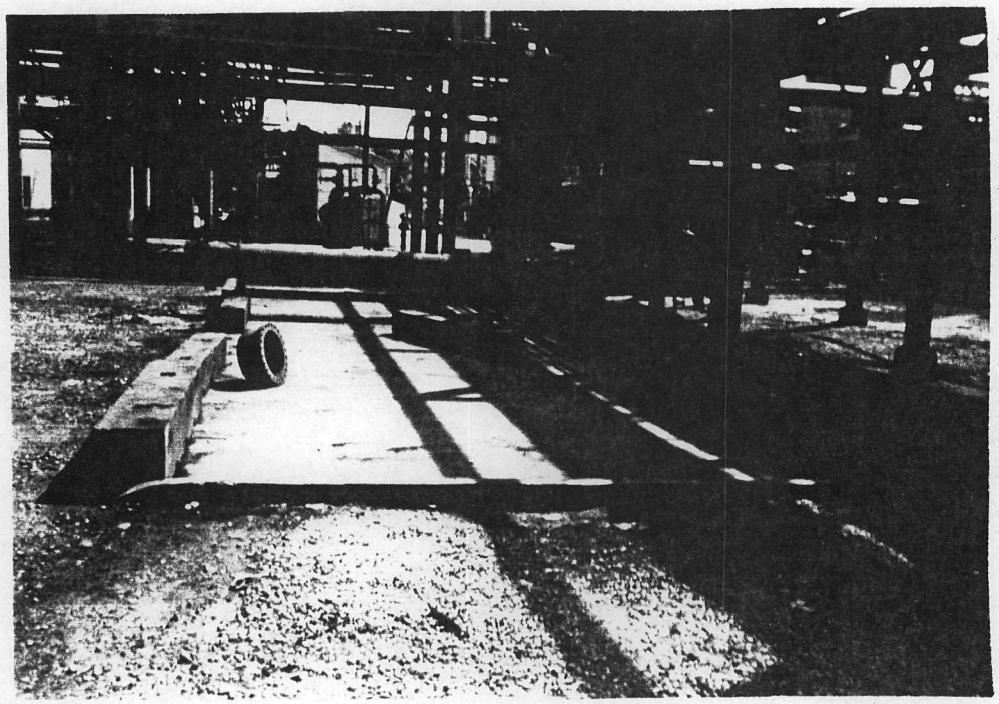
Date:	August 21, 1991
Facility Representatives:	Ronald Snook, Clark Oil & Refining Corporation Stafford Jacques, Clark Oil & Refining Corporation
Inspection Team:	Scott R. Tajak, Resource Applications, Inc. Cynthia Tarka, Resource Applications, Inc.
Photographer:	Scott R. Tajak
Weather Conditions:	Sunny, Temperature 85°F
Summary of Activities:	RAI conducted a VSI at the Clark facility at 8:30 A.M. on August 21, 1991. Mr. Ronald Snook and Stafford Jacques were present as facility representatives, and explained facility operations and waste management practices. The facility is an operating refinery which produces many petroleum based products. The size of the facility is 160 acres. A significant volume of oil was observed around the base of the Asphalt Tank (AOC 1), lying on bare earth. With this exception, RAI concluded that wastes at the Clark facility are well managed. RAI concluded the VSI at 5:30 P.M.



Photograph No. 1 Location: SWMU 1
Orientation: East Date: 08/21/91
Description: Outdoor Drum Storage Area. The pallet in middle contains spent TCA and PCB-contaminated oil waste. The barrels to the left and right contain asphalt product.

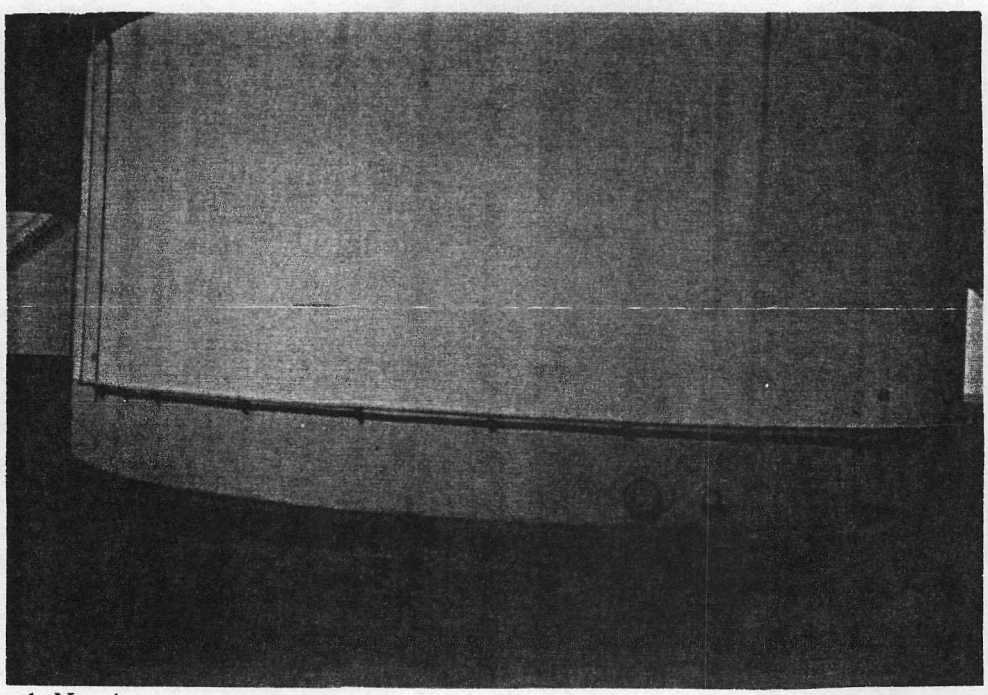


Photograph No. 2 Location: SWMU 2
Orientation: North Date: 08/21/91
Description: Sampled Product Waste Accumulation Areas in Refinery Process Area.



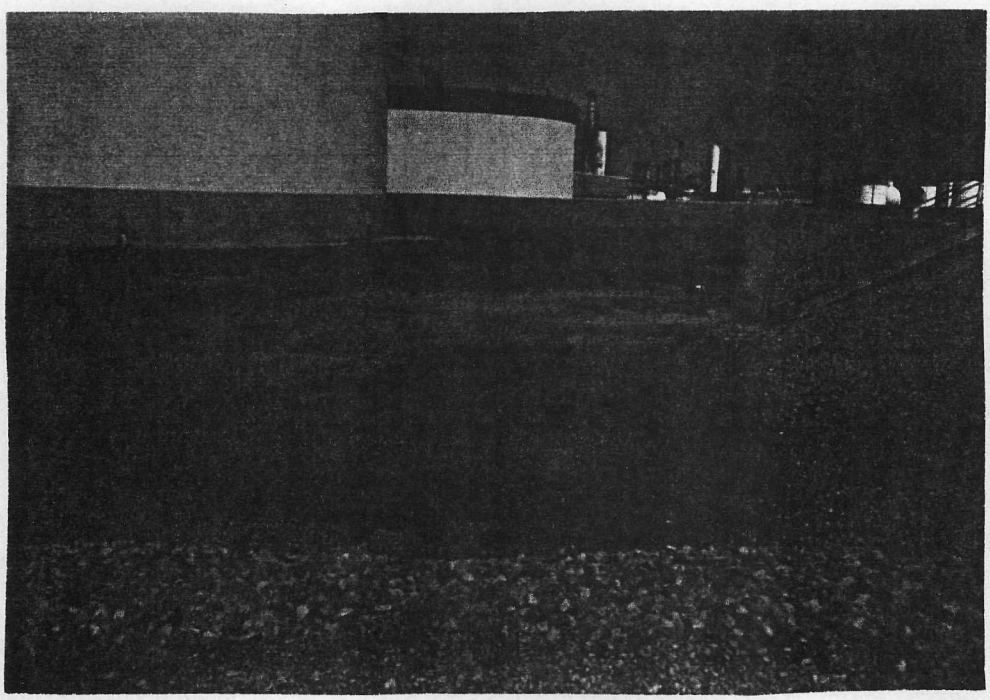
Photograph No. 3
Orientation: South
Description: Bundle Cleaning Pad located in Refinery Process Area.

Location: SWMU 4
Date: 08/21/91

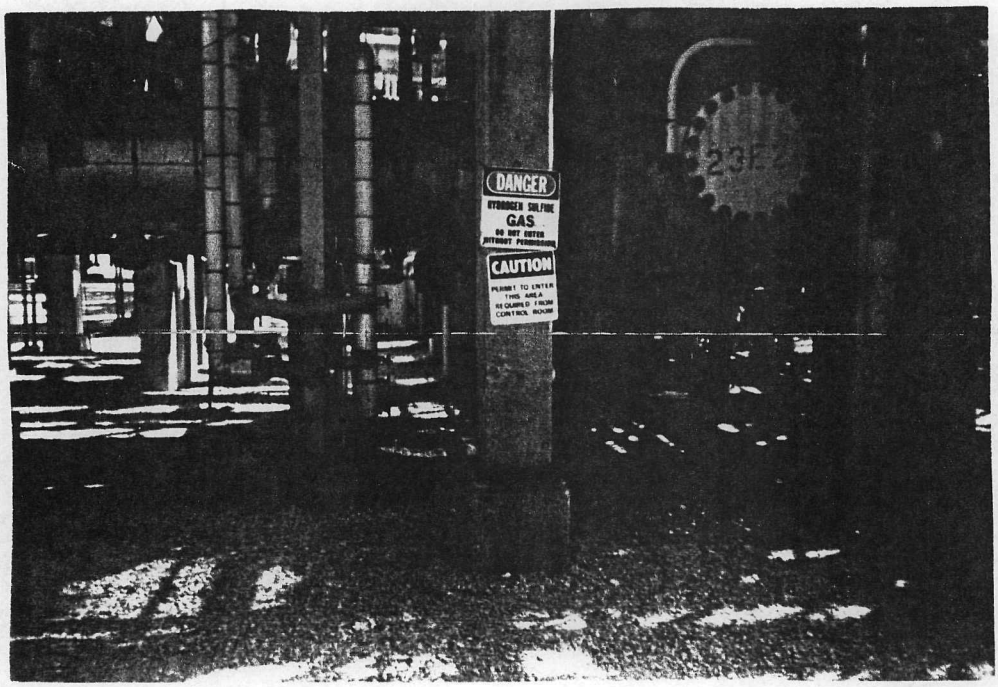


Photograph No. 4
Orientation: Northeast
Description: Former Satellite Accumulation Area.

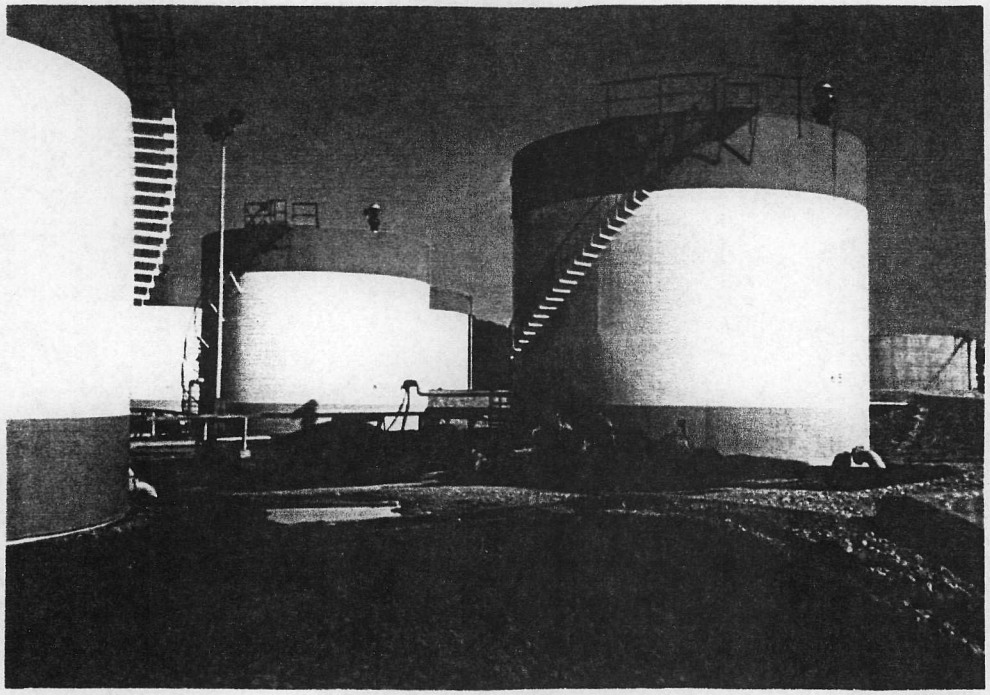
Location: SWMU 5
Date: 08/21/91



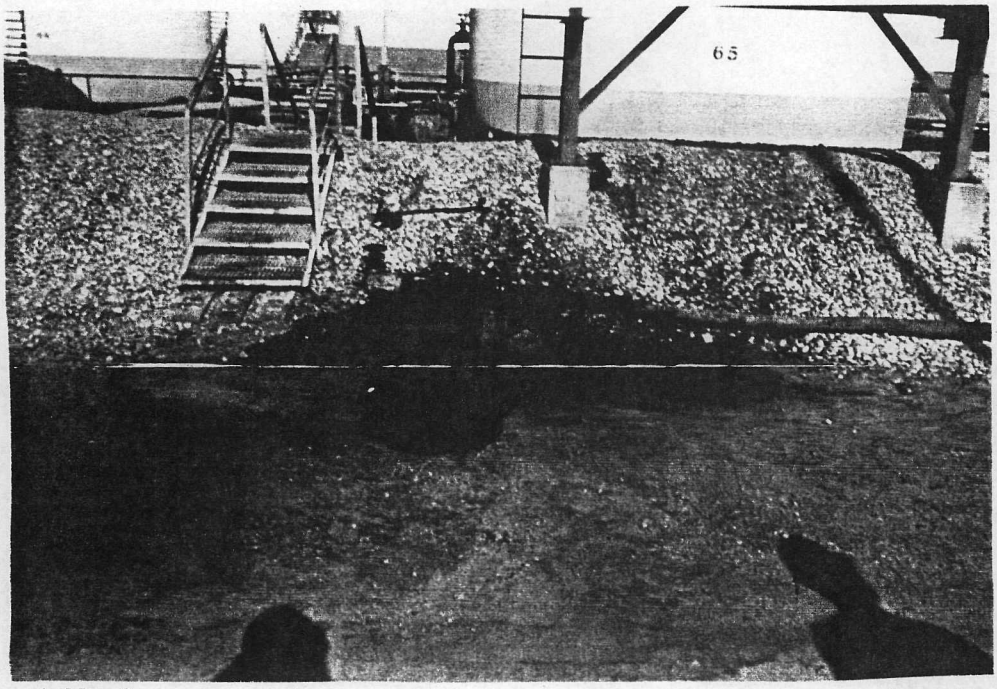
Photograph No. 5 Location: SWMU 6
Orientation: East Date: 08/21/91
Description: Former Storage Area. Tank #801 is in background. The empty area in right hand bottom corner is where unit was located.



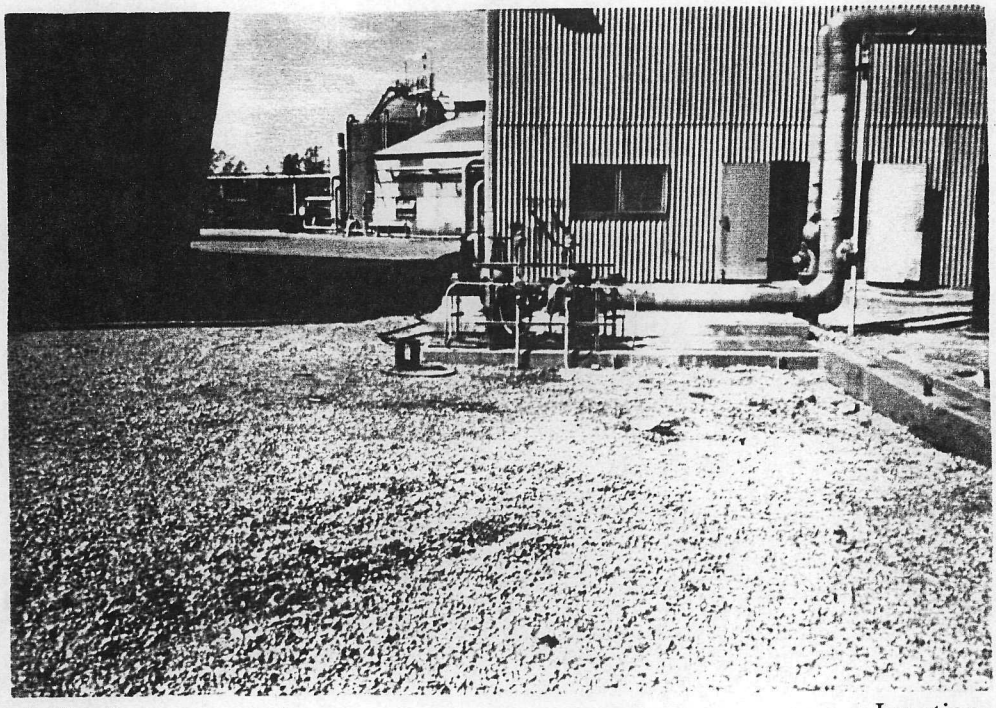
Photograph No. 6 Location: SWMU 7
Orientation: South Date: 08/21/91
Description: Satellite Accumulation Area for Scrap Sulfur.



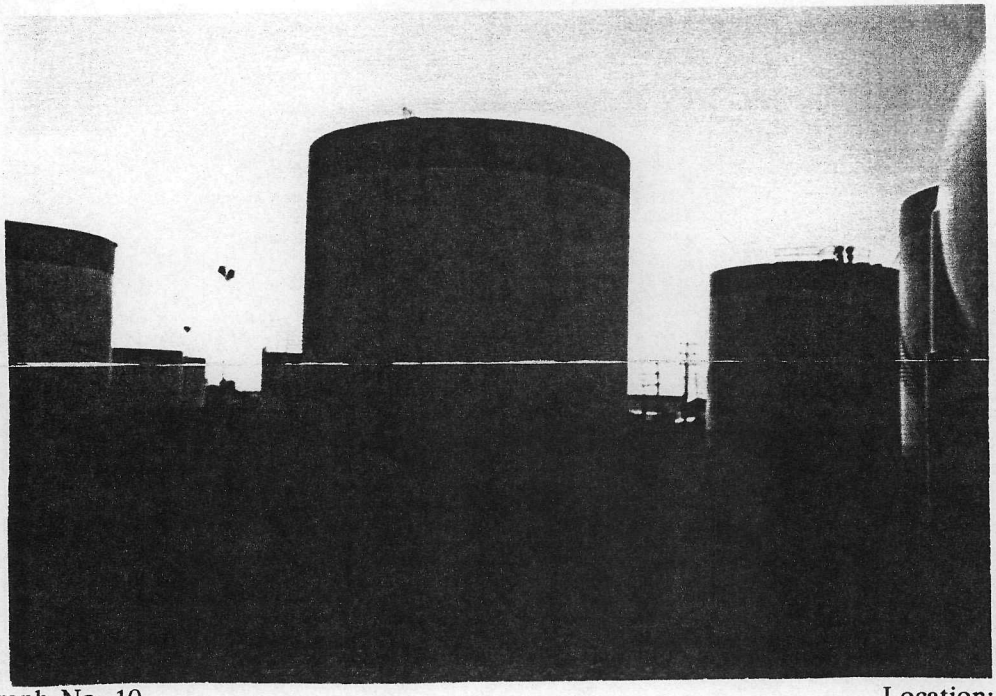
Photograph No. 7 Location: SWMU 8
Orientation: Southeast Date: 08/21/91
Description: Storage Treatment Tanks. Tanks #63 and #65 (center and right) are oil-water separator units. Tank #66 (left) is a storage tank.



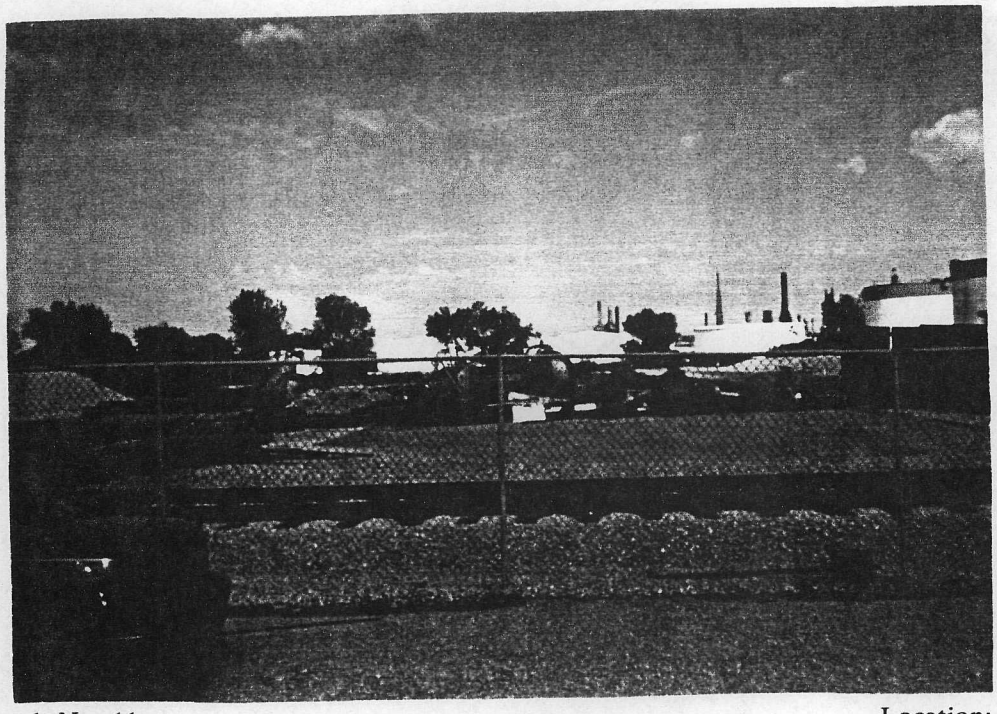
Photograph No. 8 Location: SWMU 8
Orientation: East Date: 08/21/91
Description: Storage Treatment Tanks and pipeline connection to tanker truck waste disposal pumping station. A full dip pan is in foreground. Note heavy soil staining in center.



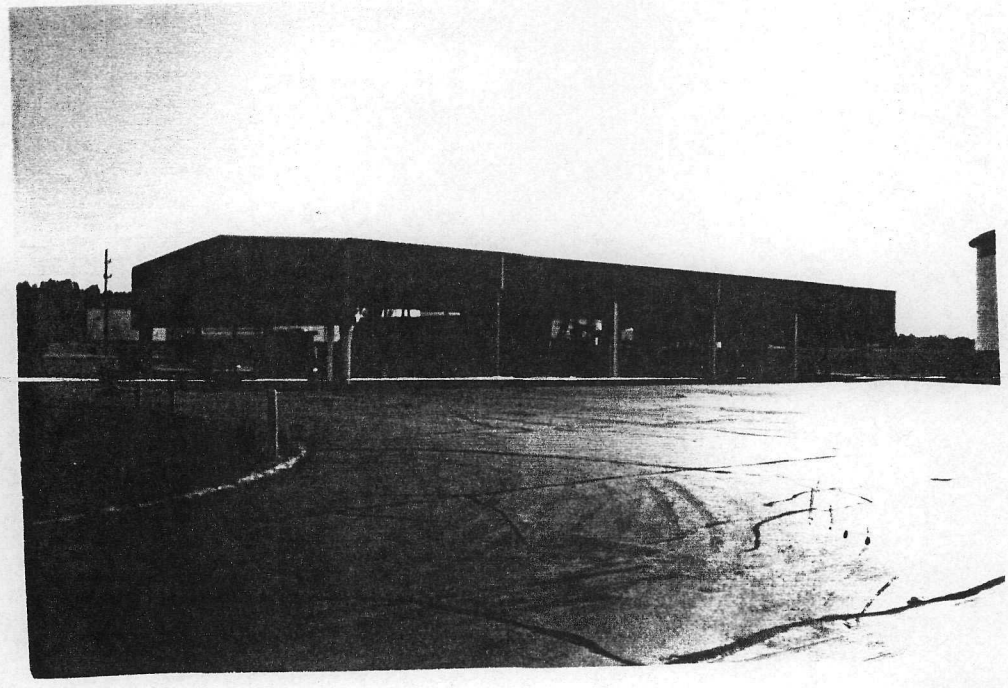
Photograph No. 9 Location: SWMU 9
Orientation: North Date: 08/21/91
Description: Approximate location of Former Container Storage Treatment Area in foreground.



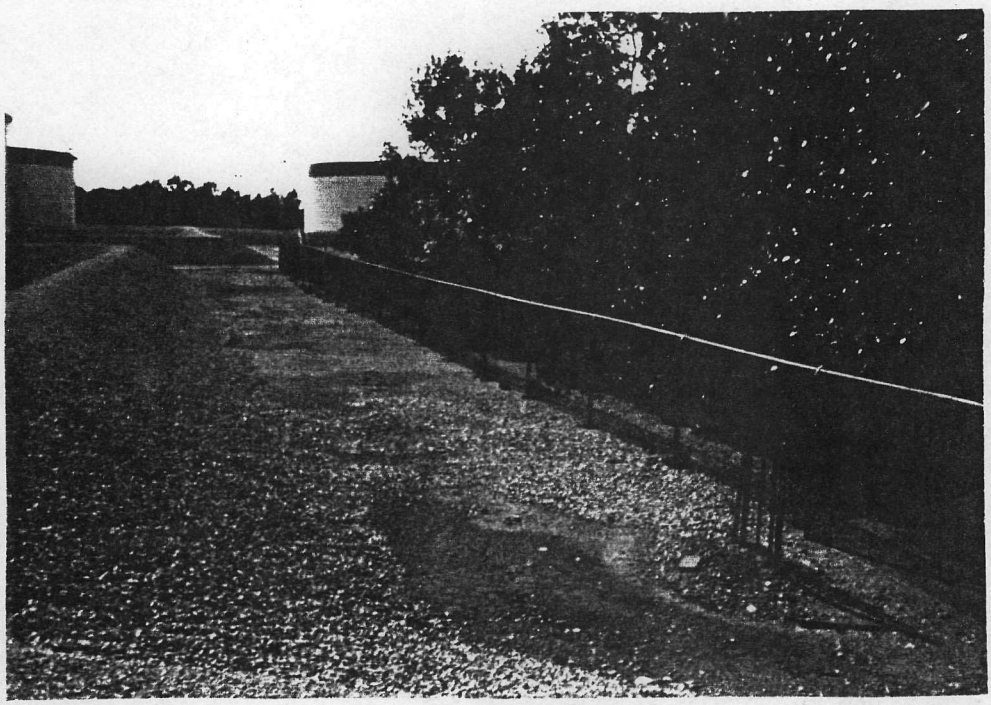
Photograph No. 10 Location: SWMU 12
Orientation: West Date: 08/21/91
Description: Approximate location of Former Storage Treatment Tank. According to the RCRA Part A Permit application map, this former unit was located where the dike is currently.



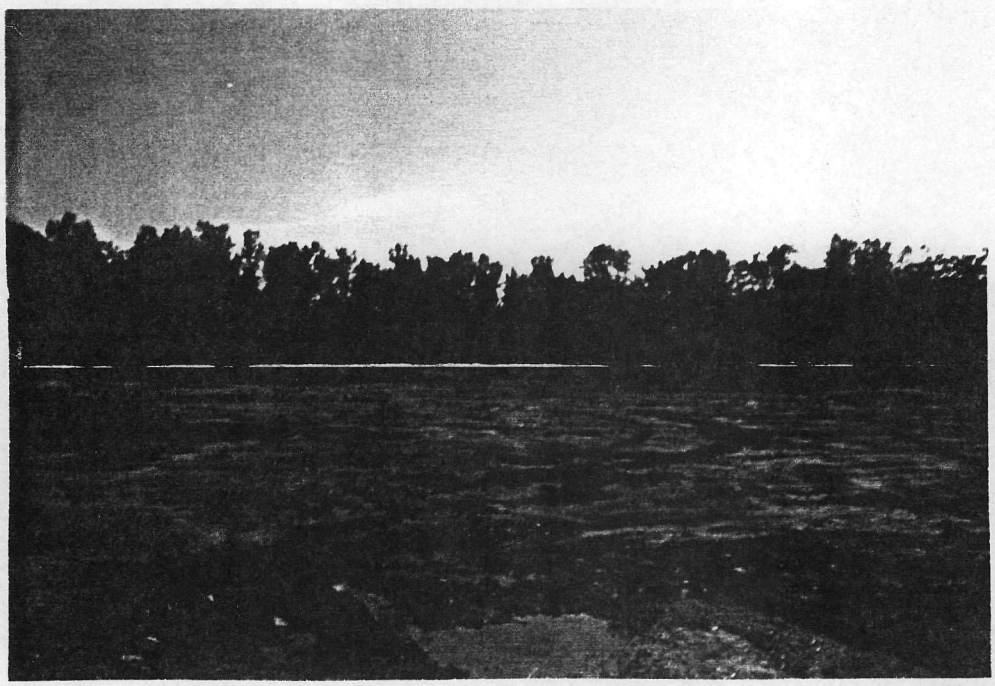
Photograph No. 11 Location: SWMU 13
Orientation: East Date: 08/21/91
Description: Approximate location of the Former Drum and Waste Storage Area, currently owned by BTL Industries. The unit location lies on east side of fence.



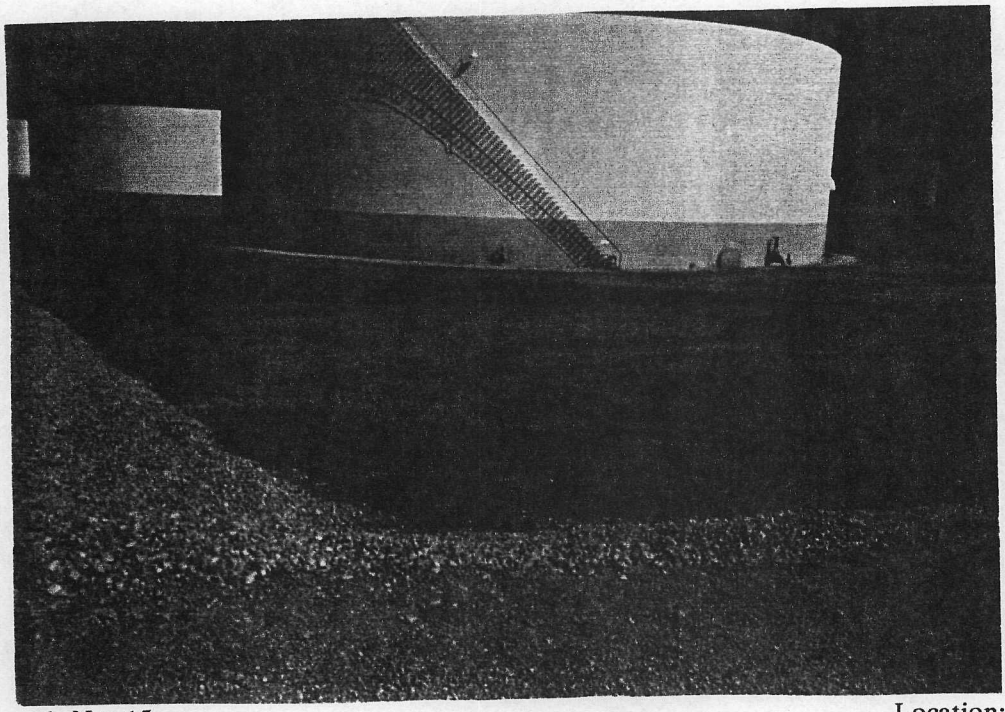
Photograph No. 12 Location: SWMU 14
Orientation: Southwest Date: 08/21/91
Description: Approximate location of a Former Container Storage Area. Currently, Clark Corporation's Blue Island Terminal is situated on this former waste area.



Photograph No. 13 Location: SWMU 15 & 16
Orientation: West Date: 08/21/91
Description: Approximate locations of a Former Container Storage Area (SWMU 15) and the Former Waste Pile Area (SWMU 16). Note electrical connection for a former flare unit in bottom right-hand corner.

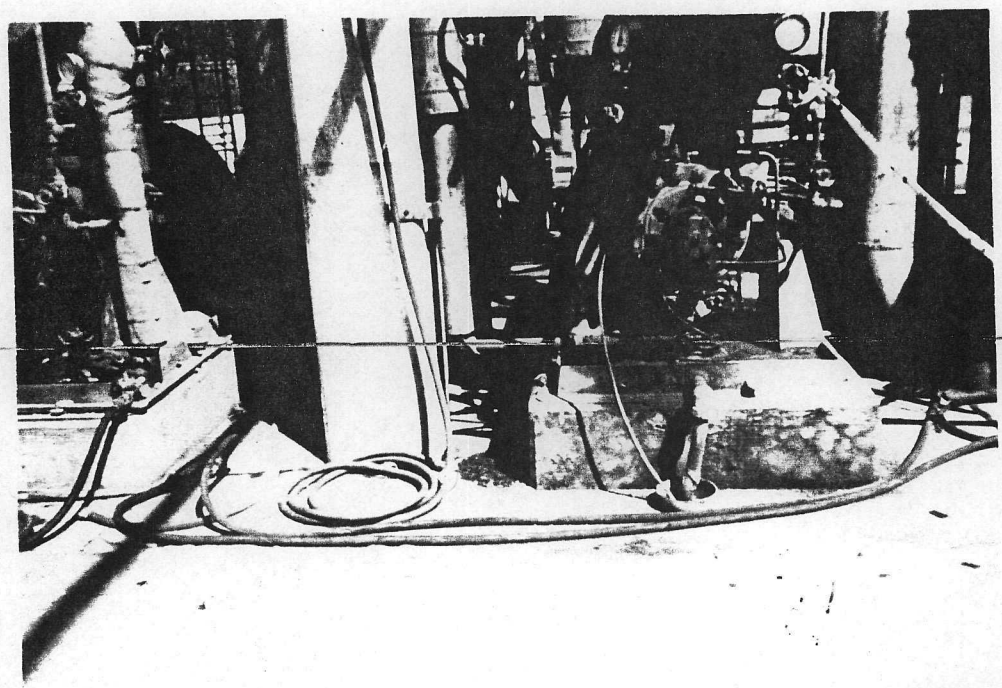


Photograph No. 14 Location: SWMU 17
Orientation: Southwest Date: 08/21/91
Description: Location of the Former Waste Piles and Impoundment Area. Note lack of vegetation in center.



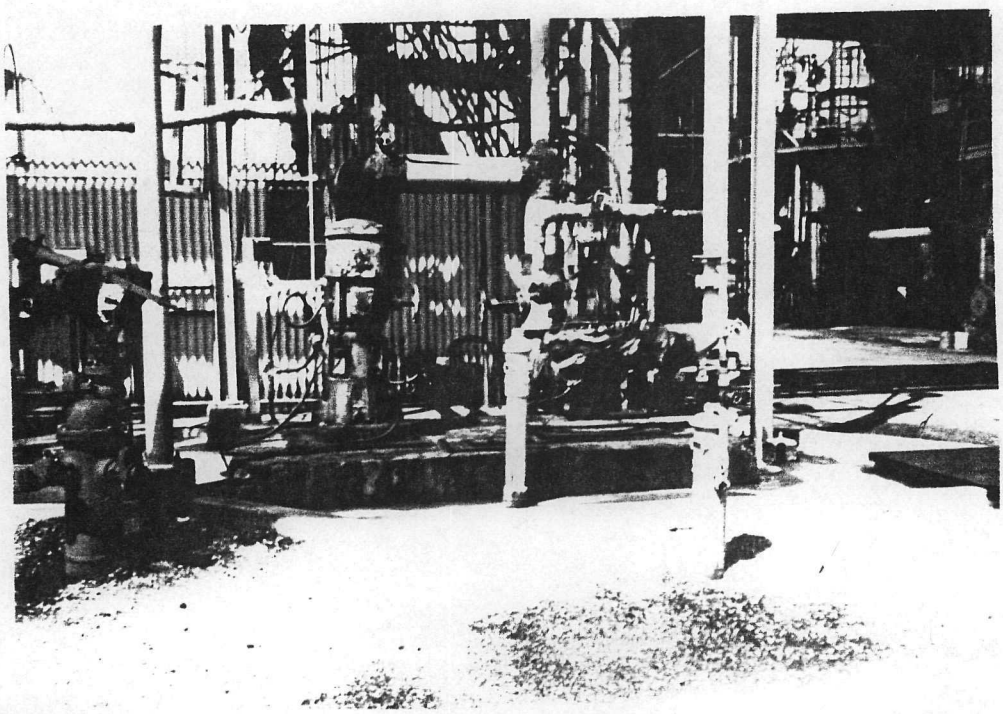
Photograph No. 15
Orientation: Southwest
Description: Former Impoundment Area.

Location: SWMU 18
Date: 08/21/91

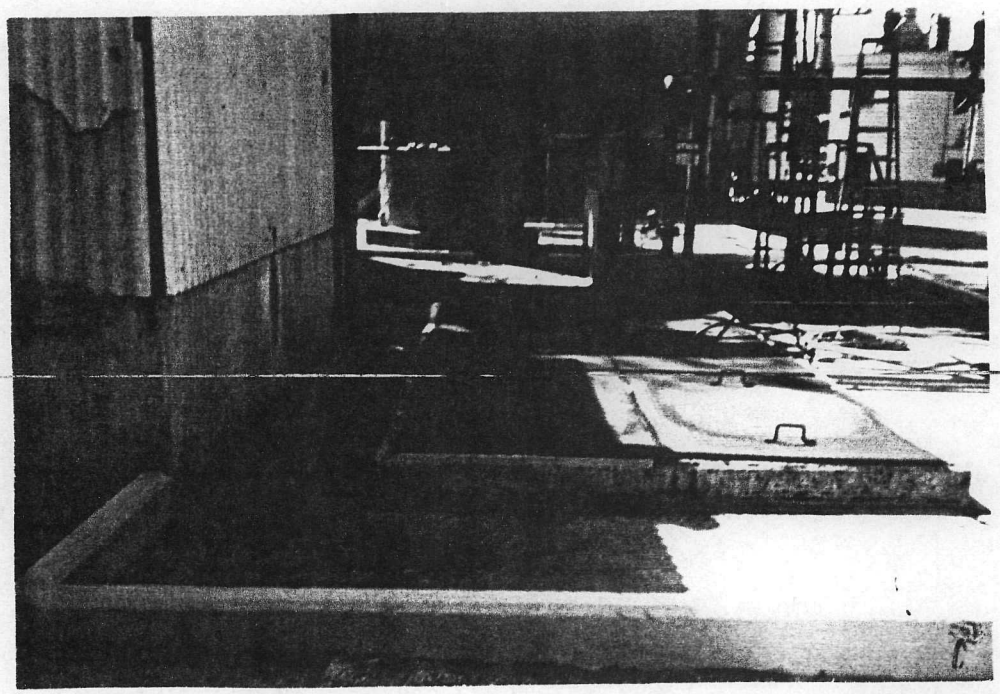


Photograph No. 16
Orientation: East
Description: An example of wastewater drain which leads into Wastewater Treatment System.

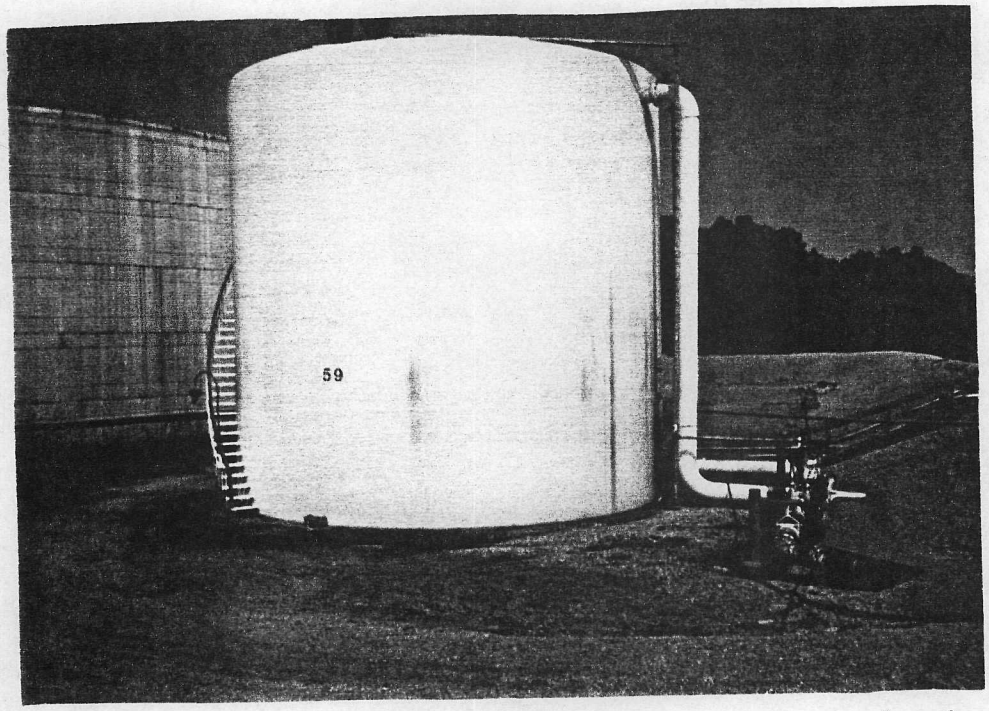
Location: SWMU 19
Date: 08/21/91



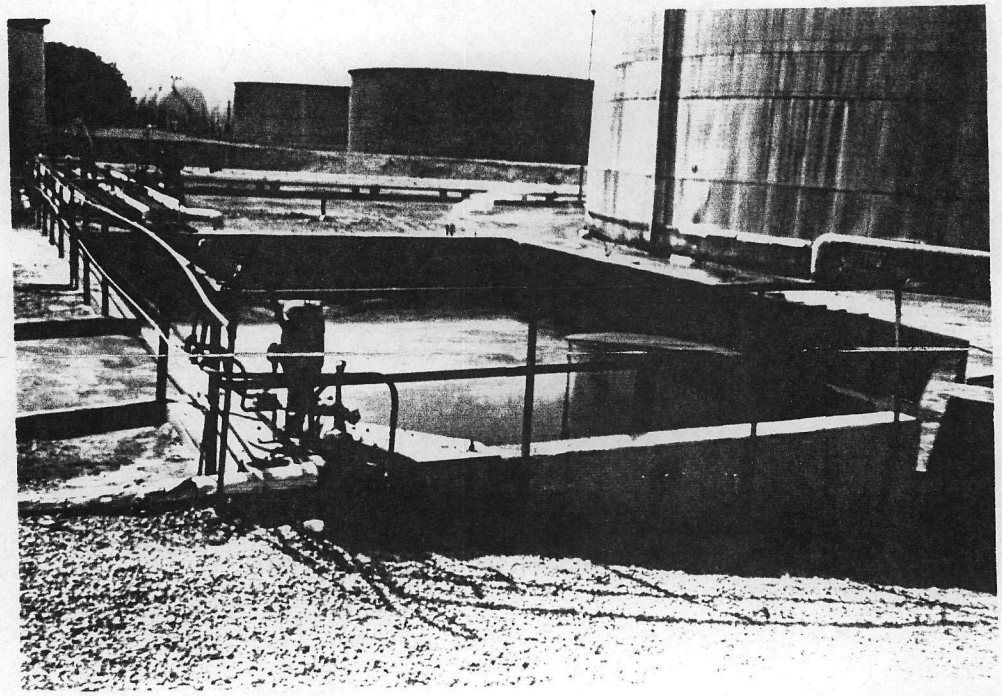
Photograph No. 17 Location: SWMU 19
Orientation: North Date: 08/21/91
Description: An example of an oily waste pump for the Wastewater Treatment System.



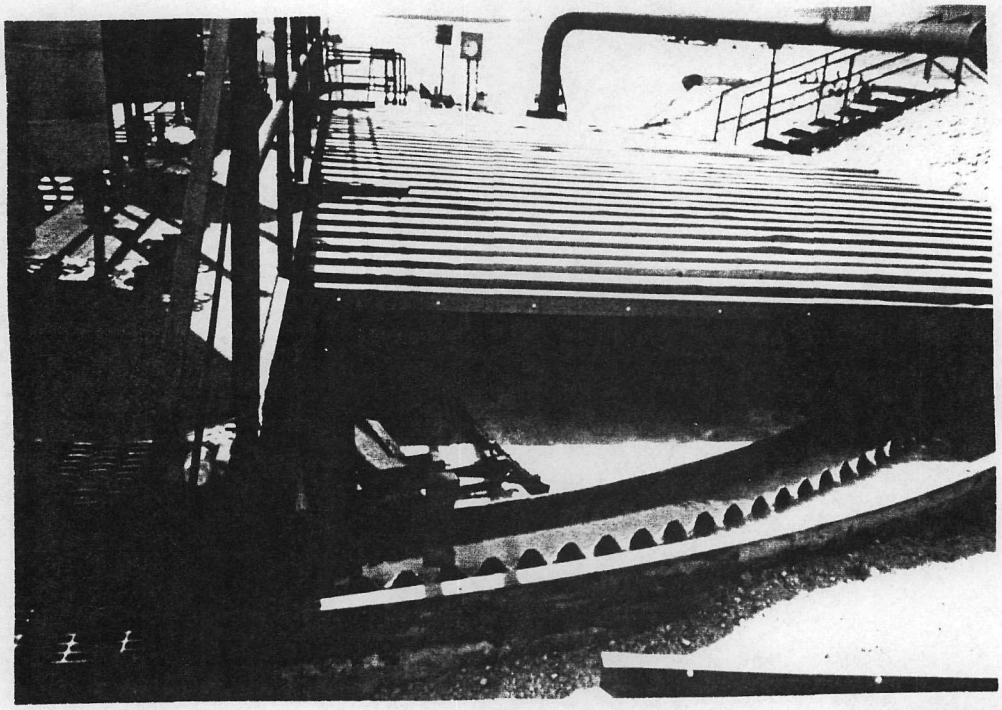
Photograph No. 18 Location: SWMU 19
Orientation: West Date: 08/21/91
Description: Some of the wastewater is neutralized in this alkylation neutralization permit. The neutralized wastewater is pumped to the Wastewater Treatment System.



Photograph No. 19
Orientation: East
Location: SWMU 19
Date: 08/21/91
Description: Treatment Tank #59 (center). This unit is an oil water separator. Note Tank #51 (left), an Asphalt Tank (AOC 1) leaking oil at base on left side of photo.

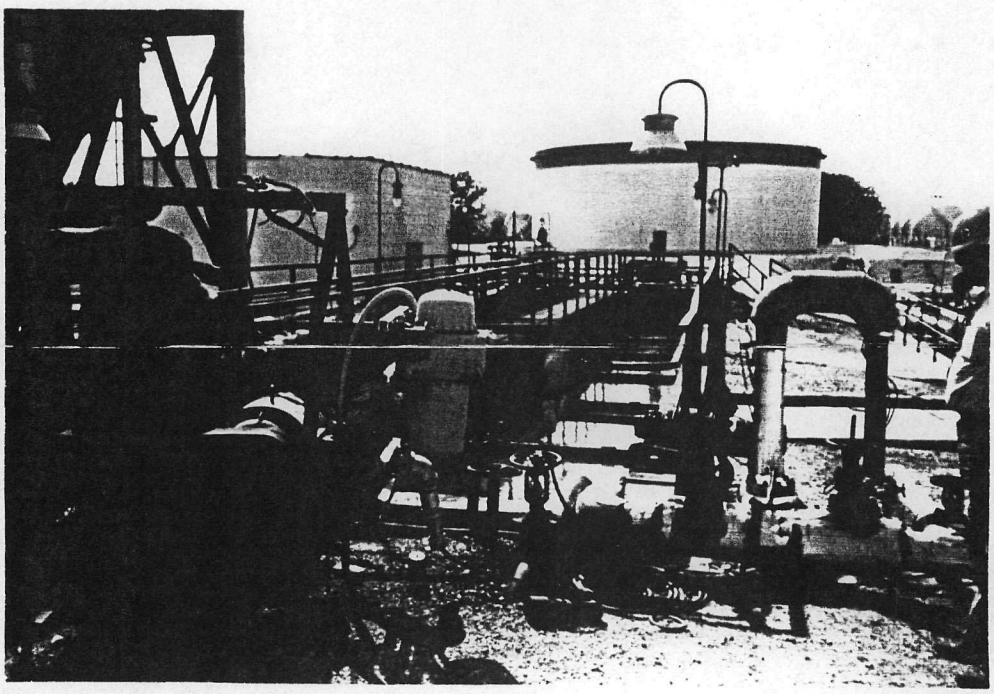


Photograph No. 20
Orientation: Northwest
Location: SWMU 19
Date: 08/21/91
Description: This 72,000-gallon overflow pit captures wastewater that Tank #59 cannot handle.



Photograph No. 21
Orientation: South
Description: An oil water skimmer, part of DAF oil water separator.

Location: SWMU 19
Date: 08/21/91

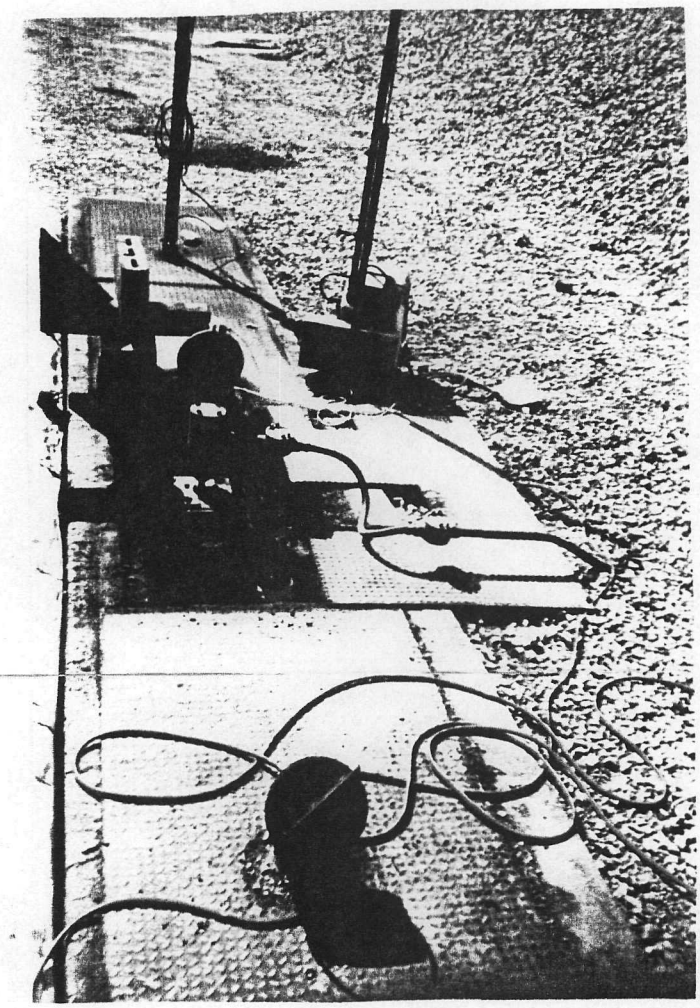


Photograph No. 22
Orientation: West
Description: Location of 2 API oil-water separators.

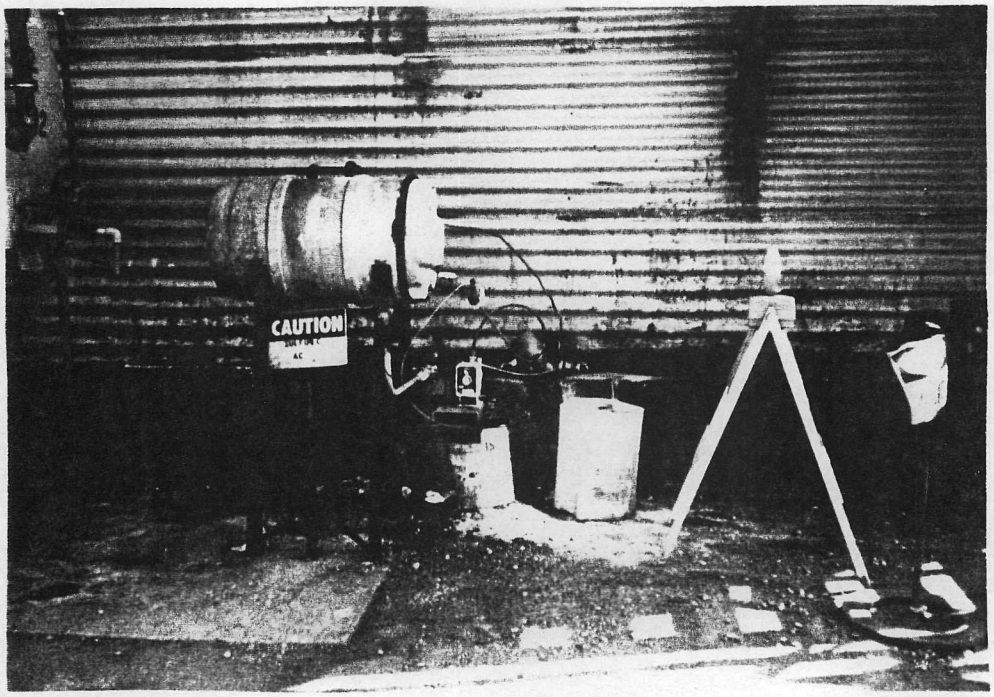
Location: SWMU 19
Date: 08/21/91

Photograph No. 23
Orientation: West
Description: The DAF oil water separator unit.

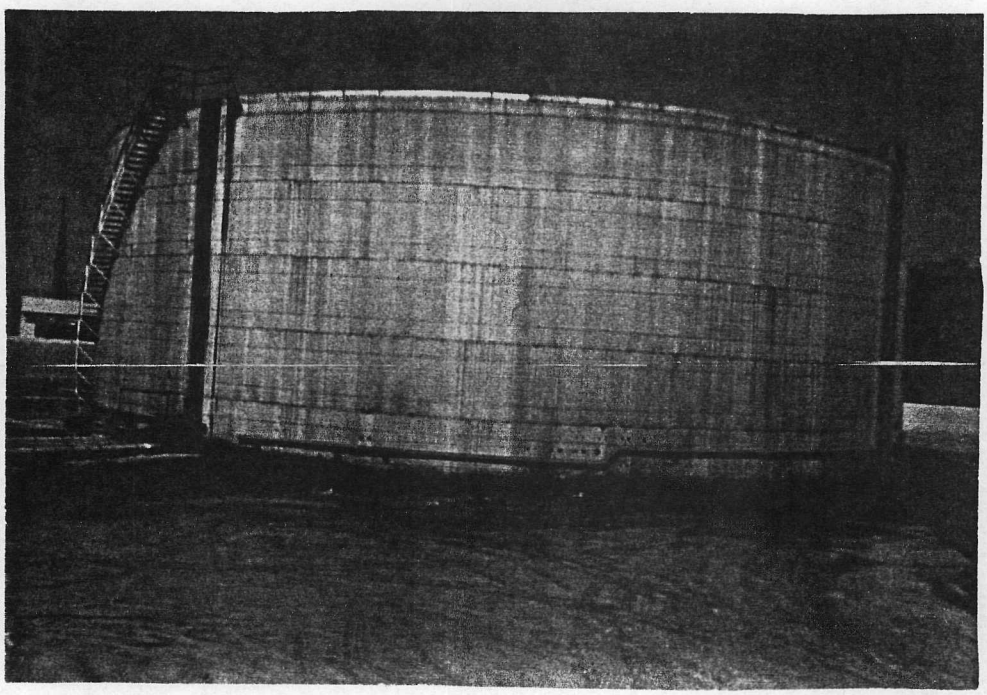
Location: SWMU 19
Date: 08/21/91



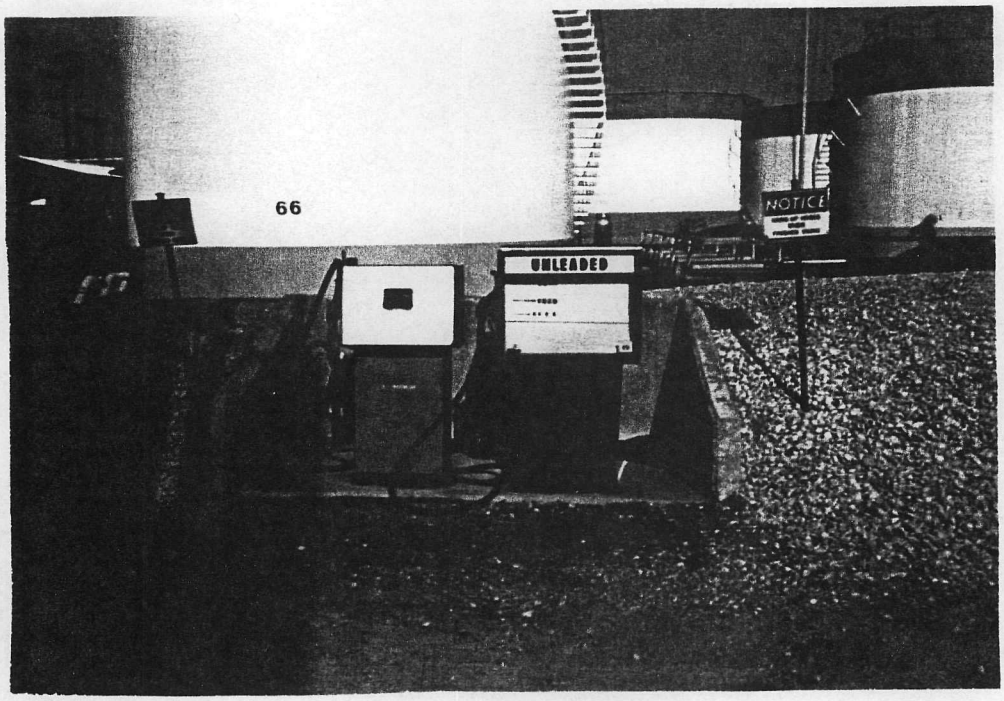
Photograph No. 24 Location: SWMU 19
Orientation: West Date: 08/21/91
Description: Flow Meter location. Discharge point of clean water to MWRD Sewer System.



Photograph No. 25 Location: SWMU 22
Orientation: South Date: 08/21/91
Description: Cooling tower used by Water Treatment Plant for cooling boilers. Note sludge splattering on unit wall. Also note caustic on ground under sulfuric acid tank.



Photograph No. 26 Location: AOC 1
Orientation: Northeast Date: 08/21/91
Description: Asphalt Product Tank. Note oily liquid on soil at base of tank.



Photograph No. 27
Orientation: East
Description: Location of two Underground Fuel Product Storage Tanks.

Location: AOC 2
Date: 08/21/91